

Final

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Remedial Investigation Report

**L34 Munitions Response Site
(JAAP-004-R-01)**

Joliet Army Ammunition Plant, Illinois

June 2016

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Acronyms and Abbreviations

°F	degrees Fahrenheit
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHE	Chemical Warfare Materiel Hazard Evaluation
CHF	Contamination Hazard Factor
CSM	conceptual site model
CTT	Closed, Transferring, and Transferred
CWM	chemical warfare materiel
DoD	Department of Defense
DQO	data quality objective
EHE	Explosive Hazard Evaluation
EMM	earth-moving machinery
EODT	EOD Technology
FS	Feasibility Study
H	High
HA	Hazard Assessment
HHE	Health Hazard Evaluation
IEPA	Illinois Environmental Protection Agency
ILCA	Illinois Land Conservation Act
IRP	Installation Restoration Program
JACPC	Joliet Arsenal Citizens Planning Commission
JOAAP	Joliet Army Ammunition Plant
L	Low
L34	Former Burning Area Munitions Response Site
LAP	Load-Assemble-Package
M	Medium
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC	munitions and explosives of concern

MFG	Manufacturing
MMRP	Military Munitions Response Program
MNTP	Midewin National Tallgrass Prairie
MPF	Migration Pathway Factor
MPPEH	material potentially presenting an explosive hazard
MRS	Munitions Response Site
MRSP	Munitions Response Site Prioritization Protocol
NFA	No Further Action
NPL	National Priorities List
RF	Receptor Factor
RI	Remedial Investigation
ROD	Record of Decision
SI	Site Inspection
SSFR	Site-Specific Final Report
TPP	Technical Project Planning
URS	URS Group, Inc.
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
UXO	unexploded ordnance

Purpose and Scope

This Remedial Investigation (RI) report was prepared by URS Group, Inc. for the United States (U.S.) Army Corps of Engineers – Louisville District under Contract Number W912DY-09-D-0061, Delivery Order CY02. This report documents the RI completed at the Former Burning Area (L34) Munitions Response Site (MRS) (JAAP-004-R-01), referred to as L34, at the former Joliet Army Ammunition Plant (JOAAP) in Will County, Illinois. The RI work falls within the Military Munitions Response Program (MMRP) and was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act and the National Contingency Plan.

The objectives of this RI were to:

- Determine if munitions and explosives of concern (MEC) are present at the MRS in surface or subsurface soil.
- Characterize the nature and extent of MEC, if present.
- Determine if a release of munitions constituents (MC) has occurred and characterize the nature and extent of that release.
- Determine if burn residual is present below the upper 12 inches of soil.
- Provide data necessary to assess the associated threat to human health or the environment.
- Collect adequate information to complete a Feasibility Study or to make a No Further Action (NFA) recommendation.

The principal field activities completed during the RI were a biological/ecological site visit, vegetation removal, investigative trenching using earth-moving machinery, visual inspection of trenches and trench material, and backfilling. Discrete MC soil sampling was to be performed only if trenching results indicated the presence of MC sources and release mechanisms such as exposed explosive filler or burned material. Based on the findings of the trench investigation, MC soil sampling was not necessary.

Background

The L34 MRS is in the central portion of the former Load-Assemble-Package Area, along Prairie Creek to the east of Chicago Road and approximately 0.5 mile north of Central Road. The L34 MRS was used from the 1940s to the 1950s for open burning of raw explosives and as a disposal area for demilitarized ceramic mines. The L34 MRS is owned by the U.S. Army but is not in use. The U.S. Army intends to transfer the property to the U.S. Department of Agriculture (USDA) for inclusion into the Midewin National Tallgrass Prairie (MNTP). The land surrounding the L34 MRS has already been transferred to and is owned by the USDA. The U.S. Forest Service, a branch of the USDA, manages the MNTP property.

Various investigations and removals have already been completed at L34:

- Under an Installation Restoration Program (IRP) RI, soil, surface water, and sediment sampling determined that chemical contaminants were below remedial goals. The L34 site was listed as an NFA site for soil and groundwater in the 1998 Record of Decision (ROD).
- An Ordnance Removal and Site Characterization was completed in 2001 to locate, identify, and dispose of all surface and subsurface unexploded ordnance (UXO). Munitions-related scrap items consisting of M5 mines and nose and base fuzes were found, but no UXO items. Less than 10 percent of the site was cleared during this project.
- A Closed, Transferring, and Transferred Range/Site Inventory Report was completed in 2002. A site visit was completed to collect data, and the findings indicated that potential munitions types at L34 included anti-personnel landmines. There was no potential for MC, and L34 was determined to be MMRP-eligible.
- A Site Inspection (SI) was completed in 2005. During planning, it was determined that no fieldwork was needed; the SI would evaluate previously collected data. The SI report indicated that extensive MC sampling was completed under the IRP and MC contamination had been sufficiently characterized. However, MEC contamination had not been sufficiently characterized because only 10 percent of the site was cleared during the 2001 Ordnance Removal and Site Characterization. The SI recommended further characterization of MEC and implementation of land use controls at L34 based on the confirmed presence of munitions debris (MD) items. The historical site boundaries of L34 were also decreased to the current MRS boundaries.
- A MEC sifting operation was completed in 2007. Twelve inches of surficial material was removed and more than 5,600 cubic yards of soil was sifted to remove munitions items. The sifting operation resulted in off-site disposal of approximately 1,200 tons of soil and rock containing burned debris, 2,500 pounds of MD, and 2,500 pounds of other debris. Based on site history and other removals completed, it is suspected the majority of MD removed from the site was related to the M5 mine. No MEC was found during this sifting and removal.

RI Fieldwork

This RI investigated the L34 MRS using a combination of investigative trenches and test pits to depths of 24 inches below ground surface (bgs). A total of 3,300 linear feet of trenches and 18 test pits were excavated and inspected by UXO technicians. No MEC or evidence of MC contamination (e.g., burned material or exposed filler from broken MEC) was identified. Pieces of ceramic and glass from demilitarized M5 mines were identified throughout the site, inspected, and classified as material documented as safe (MDAS). MDAS items recovered from the investigative trenches and test pits were encountered from the ground surface to approximately 24 inches bgs. Trench bottoms, at a depth of 24 inches bgs, were inspected and found to be free of MDAS.

Conclusions and Recommendations

Based on previous investigations, removal actions, and this RI for L34 MRS, it has been determined that the L34 MRS has been sufficiently characterized for both MEC and MC. No MEC (non-metallic mines or other) was identified in surface or subsurface soil at the L34 MRS. Previous sampling indicated that MC was not present at unacceptable levels, and no additional MC sampling was necessary during this RI because no potential sources of MC contamination (e.g., MEC items with exposed explosive filler, burned material) were identified. Both the MEC and MC conceptual site models were revised to show no complete exposure pathways for potential receptors at the L34 MRS because there is no source for MEC or MC.

A MEC Hazard Assessment Level Category rating is not applicable to the L34 MRS because no MEC was found during the RI. The Munitions Response Site Prioritization Protocol (MRSP) rating is No Known or Suspected Explosive Hazard. Based on the RI results, MEC and MC receptor pathways are incomplete. Therefore, MEC and MC do not pose an unacceptable potential hazard/risk to current and future receptors at the L34 MRS. The L34 MRS is recommended for an NFA Proposed Plan and ROD.

URS Group, Inc. (URS) was contracted by the United States (U.S.) Army Corps of Engineers (USACE) – Louisville District under Contract Number W912DY-09-D-0061, Delivery Order CY02 to complete munitions response services at the former Joliet Army Ammunition Plant (JOAAP) in Will County, Illinois. The work falls within the Military Munitions Response Program (MMRP), and all work was completed in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan. This Remedial Investigation (RI) report addresses the Former Burning Area (L34) Munitions Response Site (MRS) (JAAP-004-R-01), referred to as L34.

1.1 OBJECTIVES

The objectives of this RI were to:

- Determine if munitions and explosives of concern (MEC) are present in surface or subsurface soil.
- Characterize the nature and extent of MEC, if present.
- Determine if a release of munitions constituents (MC) has occurred and characterize the nature and extent of that release.
- Determine if burn residual is present below the upper 12 inches of soil.
- Provide data necessary to assess the associated threat to human health or the environment.
- Collect adequate information to complete a Feasibility Study (FS) or to make a No Further Action (NFA) recommendation.

The RI fieldwork at L34 included investigative trenching to a depth of 24 inches below ground surface (bgs) and visual inspection to determine if MEC or burn residuals were present. Additionally, discrete MC soil sampling was to be performed only if trenching results indicated the presence of MC sources and release mechanisms, such as exposed explosive filler or burned material. Based on the findings of the trench investigation, MC soil sampling was not necessary.

1.2 PROPERTY DESCRIPTION AND SITE BACKGROUND

1.2.1 Facility Location and History

The former JOAAP facility is in Will County, Illinois, approximately 10 miles south of Joliet and 40 miles southwest of Chicago (**Figure 1-1**). Interstate 80 runs east to west approximately 10 miles north of the facility, and Interstate 55 runs north to south, just to the west of the facility. The former JOAAP facility encompassed 36,000 acres.

JOAAP is a former U.S. Army munitions production facility that operated from 1940 to 1999, when all defense contractor leases ended. Prior to military use, the land comprising JOAAP was used for agricultural purposes. In 1940, the U.S. Army bought land from local farmers to develop the Elwood Ordnance Plant and the Kankakee Ordnance Works. In 1945, these two facilities were consolidated to form the Joliet Arsenal, which would later become JOAAP.

JOAAP was divided into two main functional areas by Route 53, which runs north to south through the central portion of the former facility. The Manufacturing (MFG) Area was to the west of Route 53, and the Load-Assemble-Package (LAP) Area was to the east.

The MFG Area was placed on the National Priorities List (NPL) in July 1987. This portion of the installation was used to manufacture trinitrotoluene, dinitrotoluene, 2,4,6-trinitrophenylmethylnitramine, and other chemical constituents of munitions, propellants, and explosives. The production facilities were in the northern part of the MFG Area, and an extensive explosives storage facility occupied the southern half of the MFG Area. The LAP Area was placed on the NPL in March 1989. The LAP Area was used to load, assemble, and pack bombs, shells, mines, and supplementary charge munitions for shipping, and included a demilitarization area. Chemical warfare materiel (CWM) was not produced in either the LAP or the MFG Areas at any time in the history of JOAAP and its predecessors.

The majority of the original 36,000 acres comprising the JOAAP facility has been transferred from military ownership. Approximately 13,000 acres were transferred in the early 1960s, prior to CERCLA and other environmental regulations. When the U.S. Army declared JOAAP excess property in 1993, government officials assembled a 24-person Joliet Arsenal Citizens Planning Commission (JACPC) to formulate a reuse plan for the remaining property. This group, which included members from federal, state, and local governments and non-governmental organizations, was designed to ensure that the reuse plan would be thoroughly evaluated. In accordance with the Illinois Land Conservation Act (ILCA) of 1995 and following the JACPC's reuse plan, the U.S. Army cleaned up and transferred excess property to various federal, state, and local jurisdictions between 1996 and 2005.

Current property ownership at the former JOAAP is illustrated on **Figure 1-2**. Approximately 1,500 acres of JOAAP are still under military ownership. While a small complement of U.S. Army staff is present at JOAAP, the facility is not industrially active. The Midewin National Tallgrass Prairie (MNTP) now occupies approximately 19,100 acres of the former JOAAP. MNTP lands are managed by the U.S. Department of Agriculture (USDA) Forest Service. These lands consist mostly of open fields, agricultural areas, or undeveloped woodlands. Other major property owners include Department of Veterans Affairs (Abraham Lincoln National Veterans Cemetery), State of Illinois Industrial Parks (various uses), and Will County (Prairie View Recycling and Disposal Facility).

1.2.2 L34 MRS Location and History

The L34 MRS covers approximately 3.5 acres in the central portion of the former LAP Area, along Prairie Creek to the east of Chicago Road and approximately 0.5 mile north of Central Road (**Figure 1-3**). The L34 MRS was used from the 1940s to the 1950s for open burning of raw explosives and as a disposal area for demilitarized ceramic mines. During a previous ordnance removal and characterization study, ceramic items believed to be the bodies of nonmetallic mines containing explosive residue were observed. Although unexploded ordnance (UXO) was not observed during the study, 15 related scrap items were observed that consisted of ceramic and glass M5 mines and nose and base fuzes.

1.3 PREVIOUS INVESTIGATIONS AND ACTIONS

The L34 site has undergone investigations under the Installation Restoration Program (IRP) as well as under the MMRP. In addition, removal actions have been completed.

1.3.1 IRP Investigations

IRP Phase I and Phase II RIs were completed at the LAP Area from 1991 through 1994. These RIs were performed to identify the type, concentration, and extent of contamination throughout the LAP Area at JOAAP. A total of 35 sites were investigated, including L34. At the time the Phase I RI was completed, the L34 IRP site was approximately 12 acres comprised of Burning Areas 1, 2, and 3 (shown in **Appendix A**). During the Phase I RI, soil samples, surface water samples, and sediment samples were collected at the former L34 IRP site. Metals, explosives, volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls, and pesticides were detected at L34, but well below remedial goals presented in the 1998 Record of Decision (ROD). Sampling locations and results from the Phase I RI are presented in **Appendix A**. Based on the results of the Phase I RI, no additional sampling was required at L34 during the Phase II RI. L34 was listed as a No Further Action site for soil and groundwater in the 1998 ROD.

1.3.2 MMRP Removal Actions and Investigations

In 2001, the U.S. Army Engineering & Support Center, Huntsville, contracted EOD Technology Inc. (EODT) to complete an Ordnance Removal and Site Characterization at L34. The objective was to perform a removal action (locate, identify, and dispose of all surface and subsurface UXO). During the removal action at L34, EODT found munitions-related scrap items consisting of M5 mines, and nose and base fuzes. No UXO items were found. This removal action was not completed, and less than 10 percent of the site was cleared (EODT 2001).

In 2002, L34 was included in a Closed, Transferring, and Transferred (CTT) Range/Site Inventory Report. Although no fieldwork was completed at L34 during the CTT Inventory, project personnel conducted a three-day visit to JOAAP to complete the data collection portion of the CTT. The findings of the CTT Inventory indicated that potential munitions types at L34 included anti-personnel landmines, there was no potential for MC, and L34 was MMRP-eligible. The CTT Report indicated that L34 covered (or covers) 7 acres (e2M 2002).

A Site Inspection (SI) was completed at L34 in 2005 (e2M 2005). During the Technical Project Planning (TPP) completed as part of the SI planning, it was determined that no fieldwork was needed and the SI would evaluate previously collected data. The SI report indicated that extensive MC sampling was completed under the IRP and MC contamination had been sufficiently characterized. However, MEC contamination has not been sufficiently characterized because only 10 percent of the site was cleared during the 2001 Ordnance Removal and Site Characterization. The SI recommended further characterization of MEC and land use controls (i.e., a fence surrounding the site) at L34 based on the confirmed presence of munitions debris (MD) items. The historical boundary of L34, which included Burning Areas 1, 2, and 3, were

also changed during the SI. After further research and discussions with installation personnel, it was discovered that Burning Area 3 had been used for agriculture for several years and no MEC had been reported. Therefore, the L34 boundary was remapped to include only Burning Areas 1 and 2, which decreased the reported MRS acreage.

In 2007, a MEC sifting operation was completed as part of a removal action at L34. Applicable data generated during the removal action is presented in **Appendix A**. A total of 3.5 acres was excavated to 12 inches bgs using heavy equipment and then sifted to remove munitions items. More than 5,600 cubic yards of soil was sifted, which resulted in the transport and off-site disposal of more than 1,200 tons of soil and rock containing burned debris. Approximately 2,500 pounds of MD and 2,500 pounds of other debris were recovered during the removal; however, the types of MD recovered during the sifting operation were not identified in the L34 Site-Specific Final Report (SSFR) (MKM 2010). Based on site history and other removals completed, it is suspected the majority of MD removed from the site was related to the M5 mine. The SSFR indicated that, although the removal action was completed and no MEC was found, there is a remote possibility that MEC remains at the site.

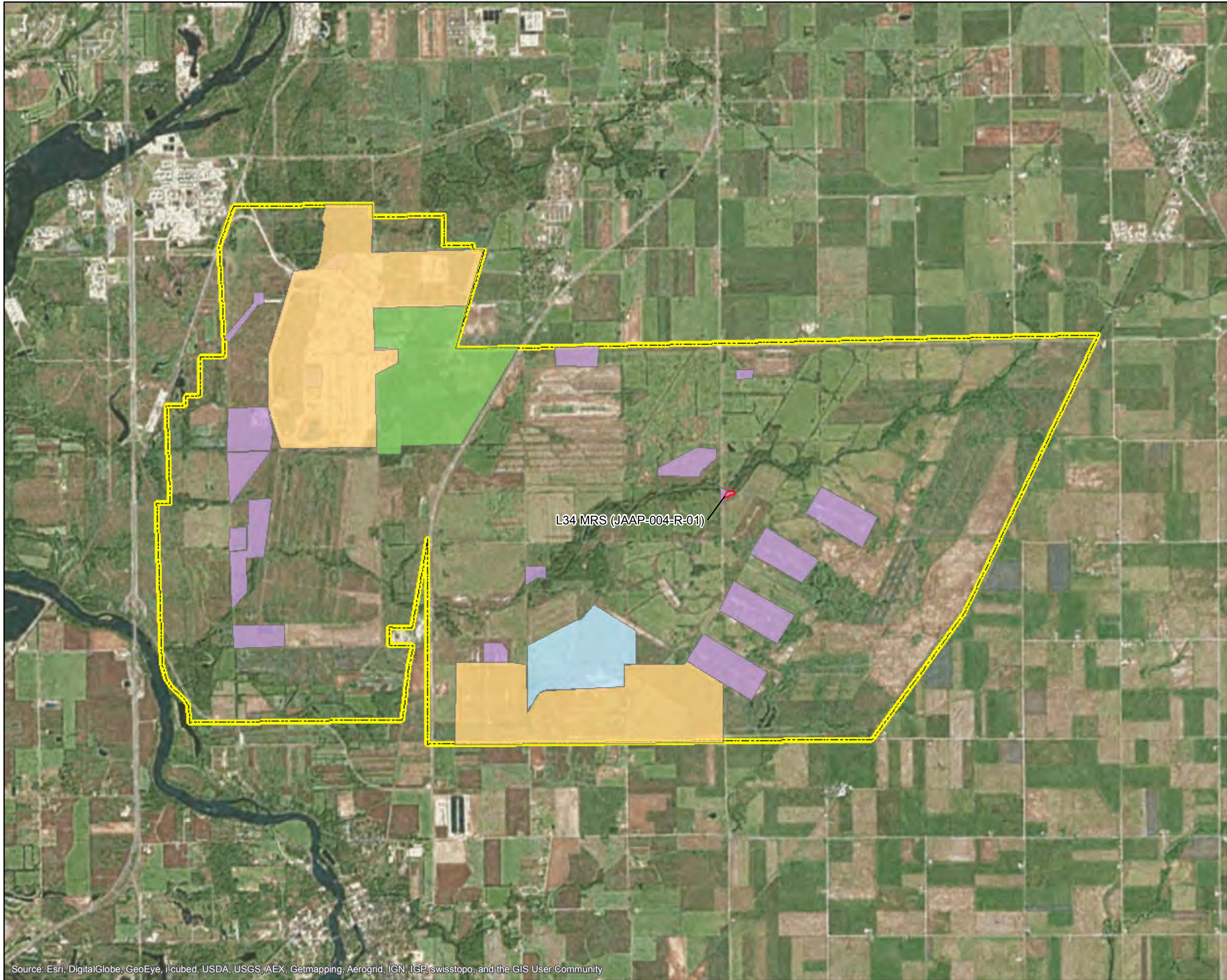
1.4 REPORT ORGANIZATION

This RI report is organized as follows:

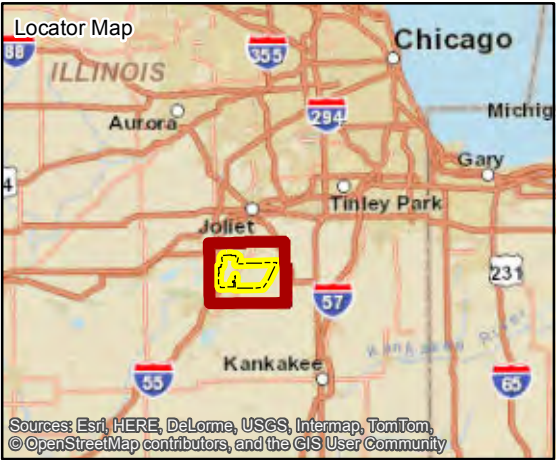
- **Section 1: Introduction** presents the objectives, property description, and results of previous investigations.
- **Section 2: General Environmental Setting** presents the general environmental setting.
- **Section 3: Study Area Investigation** presents the RI data quality objectives (DQOs) and investigation activities that were completed.
- **Section 4: MEC Characterization** summarizes the RI results and describes the nature and extent of MEC impact at the L34 MRS.
- **Section 5: Revised Conceptual Site Model (CSM)** revises the CSM developed during previous investigations.
- **Section 6: MEC Hazard Assessment and Munitions Response Site Prioritization Protocol (MRSP)** addresses the MEC Hazard Assessment (HA), which was determined to be not applicable based on the findings of this RI and previous investigations, and MRSP score.
- **Section 7: Summary and Conclusions** presents a summary of the findings and conclusions of this RI.
- **Section 8: References** presents a list of references for this RI report.
- **Appendix A: Historical Site Data** provides data from previously completed investigations and removal actions.
- **Appendix B: Biological/Ecological Site Visit** presents the findings of the biological/ecological site visit completed prior to the start of fieldwork.

- **Appendix C: Technical Project Planning Meeting Minutes** contains the TPP meeting notes that document TPP meetings held with project stakeholders.
- **Appendix D: Photographic Log** presents photographs taken during RI field activities.
- **Appendix E: Daily Field Management Reports** presents the field reports completed during RI field activities.
- **Appendix F: MRSPF Tables** presents the MRSPF scores.
- **Appendix G: Responses to Comments** contains responses to regulator comments on the RI Report and approval letter.







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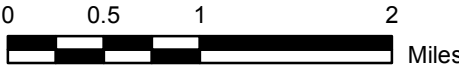


Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, ICP, swisstopo, and the GIS User Community



Legend

-  Former Joliet Army Ammunition Plant
-  L34 MRS (JAAP-004-R-01)
-  U.S. Army Property
-  State of Illinois Industrial Parks
-  Will County Landfill
-  Department of Veteran Affairs National Cemetery



URS



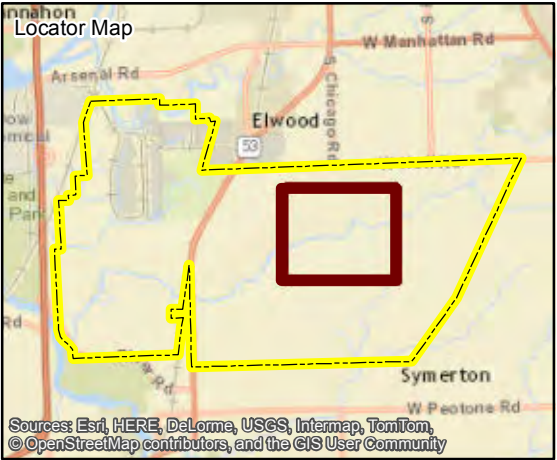
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Land Ownership Map Joliet AAP Joliet, Illinois

Drawn By: JZ	Date: 12/3/2015
Checked By: ZT	Project No. 60419079/16170871

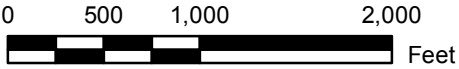
Figure 1-2

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Legend

- Former Joliet Army Ammunition Plant
- L34 MRS (JAAP-004-R-01)
- U.S. Army Property



US Army Corps
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MRS Location Map
Joliet AAP
Joliet, Illinois

Drawn By:	Date:
JM	12/3/2015
Checked By:	Project No.
ZT	60419079/16170871

Figure 1-3

2.1 PHYSIOGRAPHY, TOPOGRAPHY, AND HYDROLOGY

JOAAP is located near the fork of the confluence of the Des Plaines and Kankakee Rivers, within the northern part of the extensive Central Lowlands physiographic province. The site is included within the northern part of the extensive Central Lowlands physiographic province and characterized by relatively flat topography and low relief.

The topography at L34 is relatively flat, sloping slightly toward Prairie Creek. Elevations range from a high of 620 feet above mean sea level in the western portion of the site along the abandoned railroad bed to a low of 606 feet above mean sea level along the creek bank. The most notable topographic feature at the site is a railroad bed, which is elevated above the surrounding land surface. Surface elevations at L34 are presented on **Figure 2-1**. Surface water runoff from L34 flows either north to Prairie Creek or west to manmade drainage ditch which also discharges to Prairie Creek.

Prairie Creek flows to the west along the northern boundary of the site and eventually discharges to the Kankakee River just outside the former JOAAP boundary. Prairie Creek lies within a Federal Emergency Management Agency-identified 100-year floodplain and is subject to flooding. Flooding at Prairie Creek is assumed to be limited to inland flooding events linked to significant precipitation events where precipitation accumulates over several days or substantial precipitation falls over a short period of time. The creek does not appear to receive storm water runoff associated with storm water infrastructure and is assumed to receive runoff only via overland flow from the surrounding lands. Beyond the former JOAAP facility boundary, Prairie Creek traverses through sparsely populated agricultural lands (AEC 2004).

2.2 CLIMATE AND PERCIPITATION

The average summer temperatures at JOAAP are in the 70 to 80 degrees Fahrenheit (°F) range and average winter temperatures are in the 20 to 30°F range. July is the warmest month of the year with an average maximum temperature of 84°F. January is the coldest month of the year with an average minimum temperature of 17°F. Precipitation is generally distributed evenly throughout the year, but July tends to be the wettest month, receiving an average of 4.3 inches of rain. Average annual precipitation is 37 inches, including an average of 24 inches of snow per year (USA 2015).

2.3 GEOLOGY AND SOILS

JOAAP lies within an area that was part of the Wisconsin glaciation period, characterized by unconsolidated glacial drift deposits of varying thicknesses (Henry and Wedron Formations) overlying dolomitic bedrock. The Henry Formation is 5 to 25 feet thick and includes sandy and gravelly silts as well as distinct beds of sand and gravel. The Wedron Formation is extensive in upland areas of JOAAP and is composed of clayey silt with minor sand. The combined thickness of the Wedron and Henry formations is generally less than 25 feet in the western part of JOAAP and increases to 60 to 70 feet in the central part (Advent 2015).

According to the USDA Web Soil Survey (USDA 2015), Lawson silt loam and Varna silt loam account for nearly all soil present at the L34 MRS. Soil slopes range from 0 to 2 percent in the northern portion to 4 to 6 percent in the southern portion of the site. The remainder of the site is comprised of Ashkum silty clay loam, with 0 to 2 percent slopes. The surface soils present at the L34 MRS are shown on **Figure 2-2**.

2.4 HYDROGEOLOGY

Groundwater occurs in several aquifers beneath the former JOAAP facility. Regional groundwater flow is generally westward, but is locally influenced by streams, including Prairie Creek. A shallow overburden aquifer is located within glacial drift soils. Below the glacial drift is a Silurian dolomite water-bearing zone. Deeper Cambrian and Ordovician bedrock aquifers are isolated from the shallow aquifers by low-permeability shale beds of the Maquoketa Group.

Groundwater at the JOAAP facility has been determined by the Illinois Environmental Protection Agency (IEPA) to be both Class I (potable) and Class II (non-potable general resource); however, the IEPA has classified the glacial drift aquifer as Class II because its low yield does not supply usable quantities of potable groundwater. The Silurian dolomite is considered a Class I groundwater resource and it is used as a potable water source on a limited basis in the vicinity of the JOAAP facility despite elevated levels of sulfate and iron (e2M 2005).

2.5 VEGETATION AND ECOLOGY

JOAAP is located in the MNTP, and vegetation includes both upland (e.g., little bluestem and sideoats gramma) and lowland grasses (e.g., Indian grass and switchgrass). The woodlands at JOAAP are primarily a mix of hardwoods species, including oak, maple, ash, black walnut, shagbark hickory, cottonwood, elm, locust, box elder, osage orange, black cherry, hackberry, red mulberry, Kentucky coffeetree, field cedar, and hawthorn. Thick, nearly impassible vegetation is present within the L34 MRS, especially along the banks of Prairie Creek (Advent 2015).

On July 30, 2015, a site visit was completed by a URS Biologist to evaluate the potential for threatened and endangered species habitat the L34 MRS. The site visit indicated that L34 is an ecologically disturbed area dominated by non-woody species. Prairie Creek's banks are steep at the MRS, and are dominated by reed canary grass, or possess a gravel and rock shoreline; there are no shallow wetlands or sandy soils associated with the creek at this location. It was determined that no habitat utilized by potential threatened or endangered species is present at the creek along the MRS. There is suitable Blanding's turtle habitat upstream of the MRS, associated with a small sandbar located within the creek, but the habitat is upstream of the L34 MRS. It was determined that no native vegetative communities are intact at this location, and there is no habitat present for protected species. The complete Biological/Ecological Survey is presented in **Appendix B**.

2.6 DEMOGRAPHICS

According to the United States (U.S.) Census Bureau 2010 data, the population density of Will County is 810 persons per square mile. However, Census Tract 9800, which contains the L34 MRS, has a population density of 0 persons per square mile. Census Tract 9800 is a special Census Tract code used specifically to identify special land-use census tracts that are defined to encompass a large area with little or no residential population with special characteristics (i.e., large parks or employment areas).

The highest population density within a 2-mile radius of the L34 MRS occurs at Census Tract 8833.06 (144 persons per square mile). Census Tract 8833.06 contains parts of the villages of Elwood and Channahon, located to the north and northeast of the L34 MRS. Additional surrounding Census Tracts (8833.04, 8835.09, and 8834.02) have population densities between 30 and 244 persons per square mile. Several incorporated areas (i.e., towns, villages), however, are located up to 2 miles from the boundary of the L34 MRS. These incorporated areas include at least parts of Joliet [city], Wilmington [city], Symerton [village], Elwood [village], and Channahon [village].

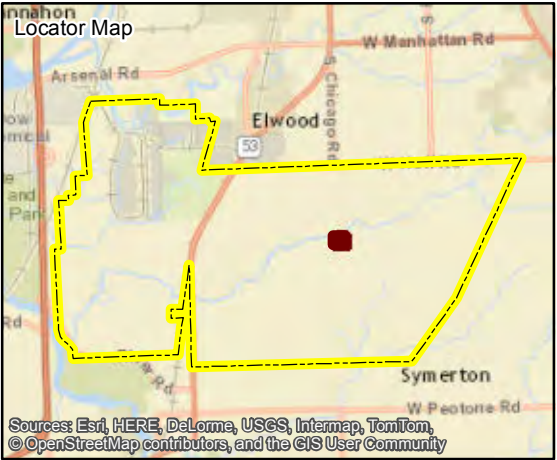
2.7 CURRENT AND PROJECTED LAND USE

The L34 MRS is owned by the U.S. Army and is currently not used. The U.S. Army intends to transfer the property to the USDA for inclusion into the MNTP. The land surrounding the L34 MRS boundary has already been transferred to and is owned by the USDA. The United States Forest Service (USFS), a branch of the USDA, manages the land surrounding the L34 MRS as part of the MNTP. The MNTP is an ecological area designated by the ILCA of 1995 and is the first national tallgrass prairie in the country. The preserve was created with the objectives of enhancing, restoring, and conserving native flora and fauna; providing opportunities for environmental education and research; allowing continuation of existing agriculture; and providing appropriate recreational activities.





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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

-  Former Joliet Army Ammunition Plant
-  L34 MRS (JAAP-004-R-01)
-  Elevation Contour - Index
-  Elevation Contour - Intermediate

Contour Source: Will County, Illinois, GIS Department



URS

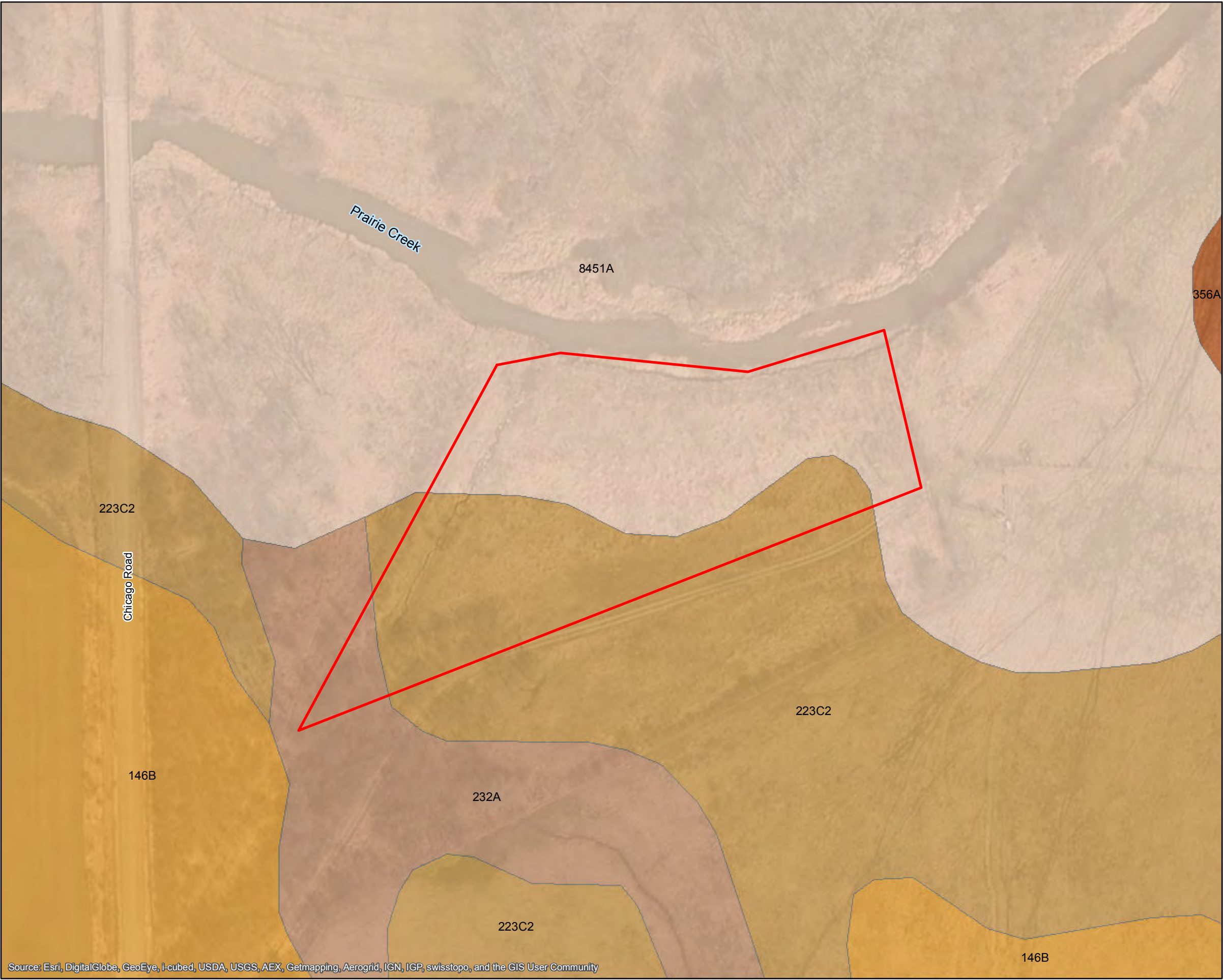


L34 Topography
Joliet AAP
Joliet, Illinois

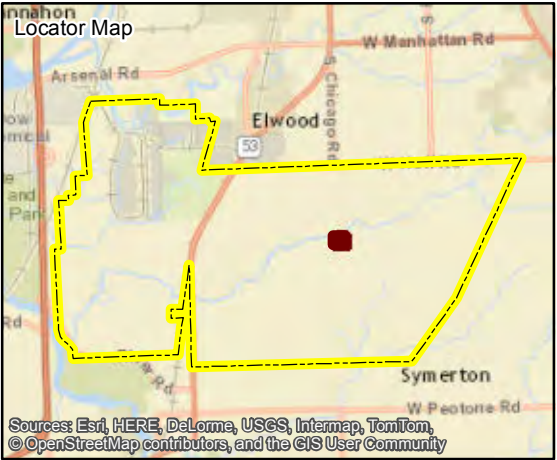
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Figure 2-1

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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, ICP, swisstopo, and the GIS User Community



Legend

- Former Joliet Army Ammunition Plant
- L34 MRS (JAAP-004-R-01)

SSURGO Soil Map Unit

- Ashkum silty clay loam, 0 to 2 percent slopes (232A)
- Elliott silt loam, 2 to 4 percent slopes (146B)
- Elpaso silty clay loam, 0 to 2 percent slopes (356A)
- Lawson silt loam, 0 to 2 percent slopes, occasionally flooded (8451A)
- Varna silt loam, 4 to 6 percent slopes, eroded (223C2)

Soil Map Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database.



Surface Soils Map
Joliet AAP
Joliet, Illinois

Drawn By:	Date:
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Figure 2-2

3.1 REMEDIAL INVESTIGATION DATA QUALITY OBJECTIVES

The DQO process is a systematic planning tool used for establishing data quality criteria and for developing a data collection approach. For the RI, the DQO process was followed to identify data needs and to collect the type, quantity, and quality of data necessary to evaluate and support decisions for the L34 MRS. The steps of the DQO development process (USEPA 2006) include:

1. **State the Problem** – Define the problem that necessitates the study. Review prior studies and existing information to gain a sufficient understanding to define the problem.
2. **Identify the Goals of the Study** – State how data will be used in meeting objectives and solving the problem, identify study questions, and define alternative outcomes.
3. **Identify Information Inputs** – Identify data and information needed to answer study questions.
4. **Define the Boundaries of the Study** – Specify the target population and characteristics of interest, define spatial and temporal limits, and determine scale of inference.
5. **Develop the Analytic Approach** – Define the parameters of interest considered important to make inferences about the target population and develop the logic for drawing conclusions from findings.
6. **Specify the Performance or Acceptance Criteria** – Specify probability limits for false rejection and false acceptance decision errors. Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use.
7. **Develop the Plan for Obtaining Data** – Select the resource-effective sampling and analysis plan that meets the performance criteria.

The DQOs for the L34 MRS were developed during the TPP process and are included in **Appendix C**. Preliminary CSMs for the L34 MRS, one for MEC and another for MC, were also developed during the TPP process. The preliminary CSMs address potential MEC and MC based on historical information and existing data and identify potential sources and pathways. These preliminary CSMs are shown on **Figures 3-1** and **3-2**.

3.2 REMEDIAL INVESTIGATION ACTIVITIES

The RI at L34 MRS consisted of the following field activities:

- Biological/ecological site visit
- Vegetation removal to prepare for investigative trenching
- Investigative trenching using earth-moving machinery (EMM) to characterize MEC
- Visual inspection of trenches and trench material to identify MC release mechanisms (e.g., MEC with exposed explosive filler or burned material).

- Backfilling and grading trenches

Sampling and analysis to characterize MC was planned; however, no evidence of MC release mechanisms (e.g., MEC with exposed filler or burned material) were observed during the RI activities at L34. Therefore, soil sampling and analysis were not required to achieve the RI objectives. The RI field activities are documented in a photographic log included as **Appendix D**.

3.2.1 Biological / Ecological Site Visit

A biological/ecological site visit was completed by a URS Biologist prior to other RI fieldwork to identify potential sensitive ecological receptors and critical habitats. It was determined that no habitat for protected species was present at the L34 MRS. This site visit is documented in **Appendix B**.

3.2.2 Vegetation Removal

To support effective trenching and inspection activities, vegetation was removed using a skid steer with mower attachment. Vegetation was cut parallel to the ground and as close to the ground surface as reasonably possible to support effective trenching operations. Cut vegetation was moved to the side of survey area. MEC avoidance procedures were implemented during vegetation removal, and the work was overseen by a qualified UXO Technician. Vegetation was removed wherever practical and safe; however, several areas could not be cleared due to unsafe terrain. Areas along the Prairie Creek bank, drainage ditches, and abandoned railroad embankments at the MRS boundaries could not safely be accessed for vegetation removal.

3.2.3 Investigative Trenching

Investigative trenching was completed within L34 from October 14, 2015 through October 20, 2015. Trenches were 3 feet wide, approximately 30 feet apart, and with a minimum depth of 24 inches bgs. The systematic trenching approach (i.e., coverage, length, location, depth, spacing, etc.) was agreed upon by the PDT and regulators to provide sufficient confidence that subsurface burn areas/pits were not present. The agreed upon spacing also provided the spacing necessary to spread spoils between the trenches for inspection. Since the entire MRS was previously excavated to 1 foot and sifted to remove ceramic mines, and no MEC was documented during this removal, the PDT and regulators also agreed that trenching to 2 feet bgs would be sufficient to confirm the effectiveness of the previous removal action and provide confidence that no MEC/pits were present. Therefore, a statistical model (e.g., UXO Estimator) was not used. Trench spacing and depth of investigation was completed in accordance with the Final RI Work Plan (URS 2015). Trenching was completed using EMM, specifically, a track-mounted excavator with 3-foot-wide bucket. The planned trench locations are shown on **Figure 3-3**. Trenching could not be completed in some areas due to a combination of unsafe terrain and heavy vegetation that could not be safely removed. In areas that could not be safely trenched using EMM, UXO Technicians manually dug test pits. The actual trench and test pit locations are shown on **Figure 3-4**.

During investigative trenching activities, UXO Technicians were positioned outside the EMM swing arm radius. The excavated trench material was placed adjacent to the trench area to allow for inspection by UXO personnel. Trenching was completed in approximately 12-inch lifts. Excavated material from the ground surface to 12 inches bgs was spread out for inspection on one side of the trench. Excavated material from 12 inches bgs to 24 inches bgs was spread out on the other side of the trench for inspection.

All excavated material went through the material potentially presenting an explosive hazard (MPPEH) inspection process in accordance with Final RI Work Plan, DoD Instruction 4140.62 (DoD 2014), and Engineer Manual 385-1-97 (USACE 2008). Excavated soil and the trench were also visually inspected for burn residue or other evidence of potential MC contamination. Once the trenching activities were complete, UXO personnel conducted a visual inspection of the trench base and sidewalls for potential MEC. The visual inspection was completed without hand-held detectors because the ceramic and glass M5 mines potentially present at the L34 MRS are not detectable using standard geophysical technology. The UXO Team Leader (UXO Technician III) documented the findings of the intrusive investigation for database entry.

3.2.4 Backfill and Grading

Following inspection by qualified UXO Technicians, excavated trench material was backfilled. The excavated material from 12 inches bgs to 24 inches bgs was backfilled first, followed by the excavated material from the ground surface to 12 inches bgs. Backfilled material was compacted using the same EMM used for excavation. The backfilling was completed under the supervision of a qualified UXO Technician.

3.3 INVESTIGATION-DERIVED WASTE MANAGEMENT

No spills of mechanical fluids occurred during investigation activities; therefore, spill containment materials and/or affected soils were not generated. Additionally, as no equipment required decontamination, no decontamination fluids were generated.

Field personnel collected all project-related and personal nonhazardous general refuse from the work area, including personal protective equipment and plastic sheeting. These materials were placed in a roll-off container near the on-site field trailer. All waste was handled and disposed of as municipal solid waste.

3.4 FIELD HEALTH AND SAFETY

A site-specific safety meeting was conducted by the UXO management team during the initial mobilization effort. Additional site safety meetings were held each morning, including when new personnel, subcontractors, or visitors came on site. Daily Field Management Reports are included in **Appendix E**. Given the short duration and relatively low risk associated with the L34 MRS, no health and safety audit was scheduled.

3.5 QUALITY CONTROL

Given the short duration and relatively low risk associated with the L34 MRS, no quality control (QC) audit was scheduled. The UXO QC Specialist conducted daily surveillance of project activities and documented this in the Daily QC Reports, which are included in **Appendix E**.

FIGURE 3-1
PRELIMINARY MEC CONCEPTUAL SITE MODEL (GRAPHICAL)

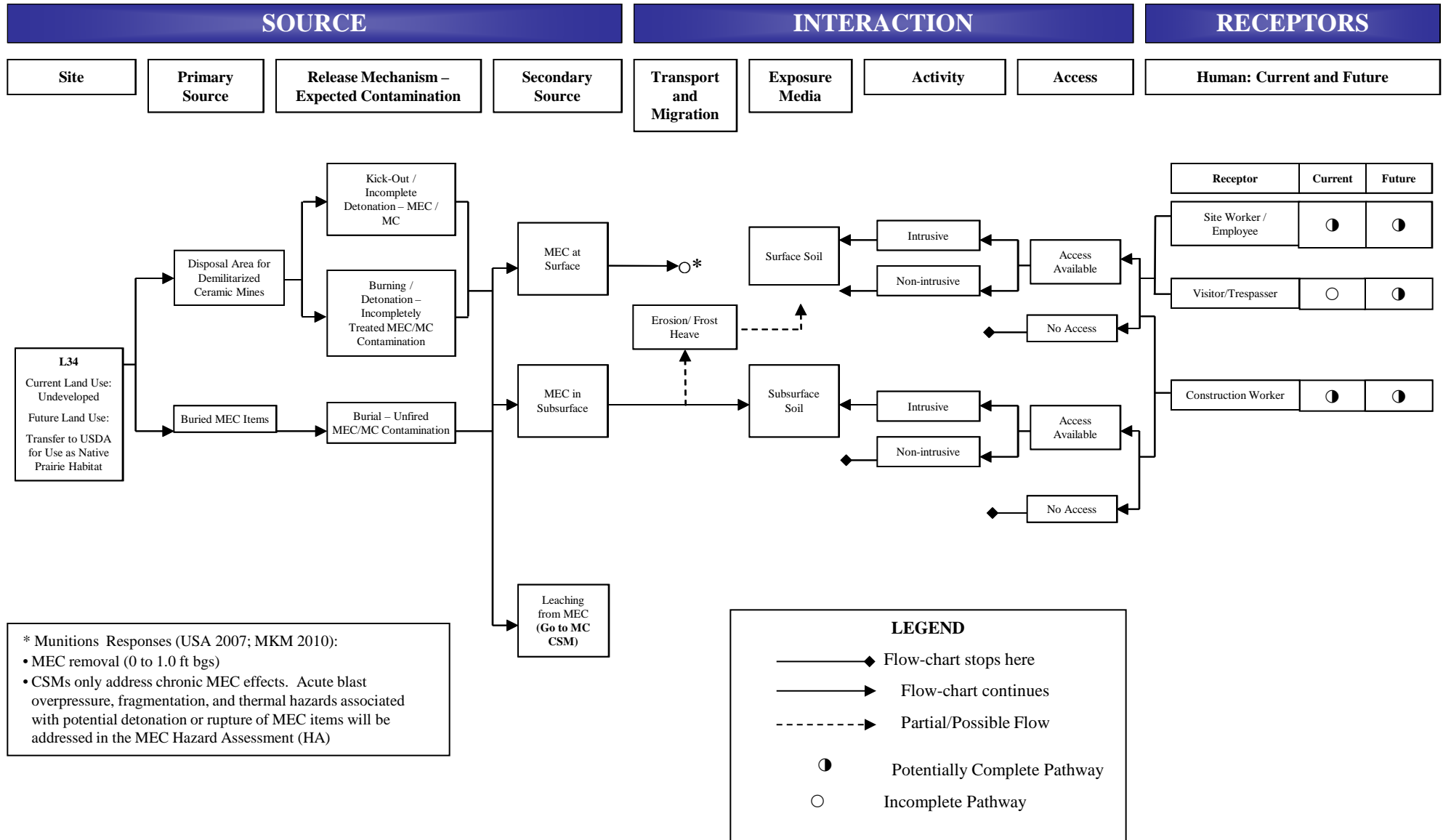
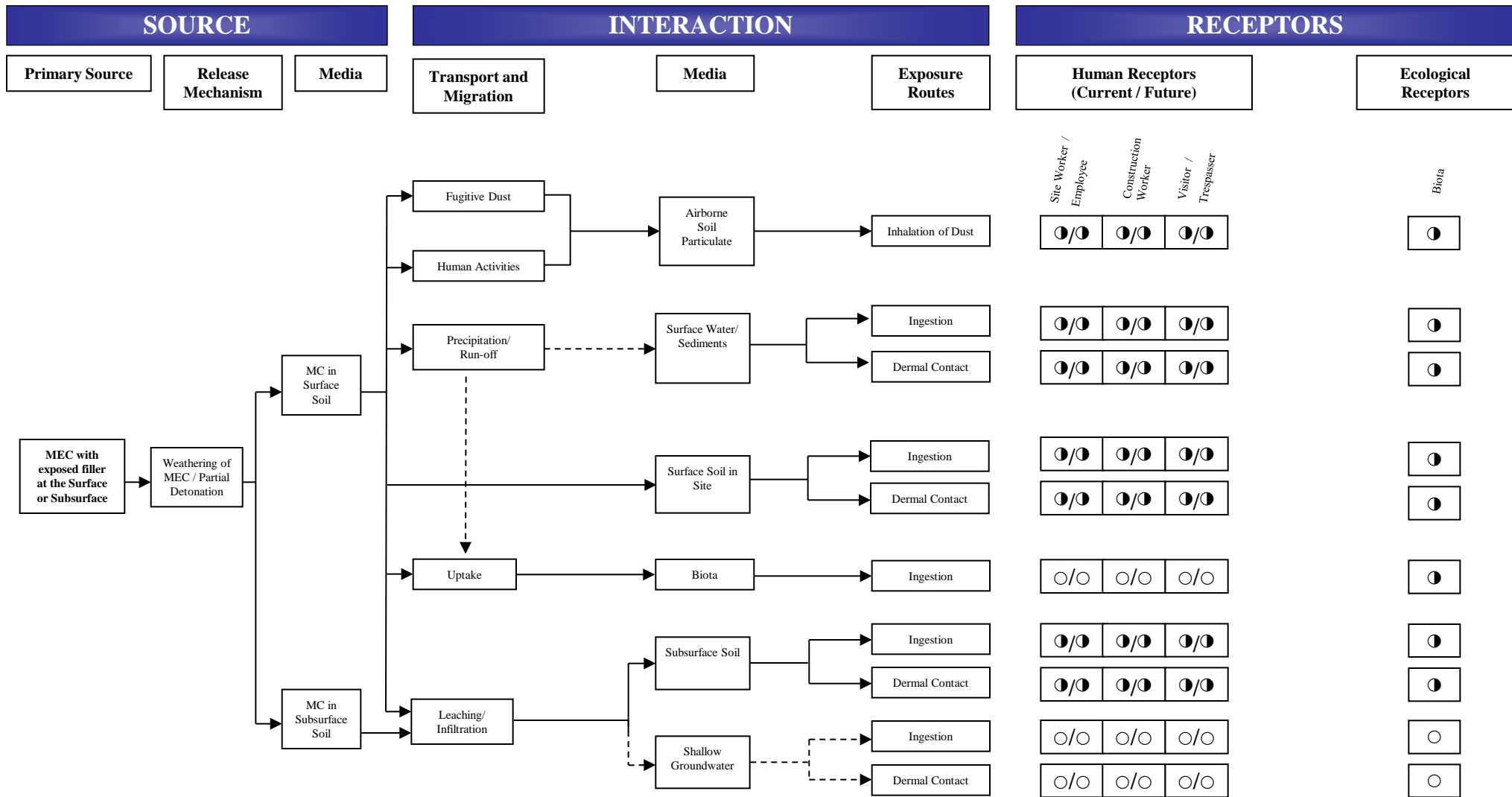


FIGURE 3-2
PRELIMINARY MC CONCEPTUAL SITE MODEL (GRAPHICAL)



IRP Remedial Activities:

- Recommended for No Further Action under the IRP
- Groundwater previously addressed under the IRP and recommended for no further assessment in 2004 ROD
- Since the IRP RI determined that site soils were not contaminated, the only potential for MC contamination is if broken / open MEC with exposed filler is found in the subsurface. Therefore, the potential for ingestion or dermal contact of MC in subsurface soil is low.

Contaminants of Concern:

- Explosives only
- Metals were eliminated as contaminants of concern during previous IRP investigations

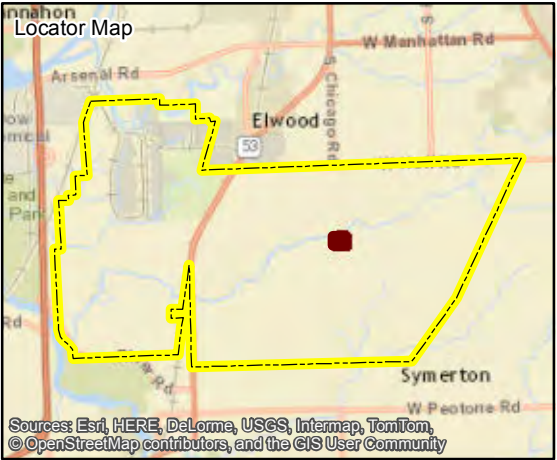
LEGEND

- ◆— Flow-chart stops here
- ▶— Flow-chart continues
- - -▶- Partial/Possible Flow
- Potentially Complete Pathway
- Incomplete Pathway




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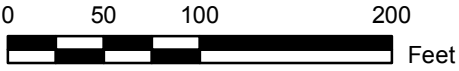


Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

-  Former Joliet Army Ammunition Plant
-  L34 MRS (JAAP-004-R-01)
-  Planned Trench



URS



Site Investigation Plan Joliet AAP Joliet, Illinois

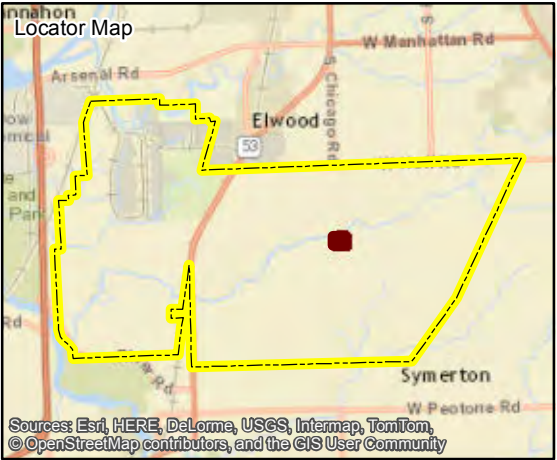
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Figure 3-3

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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

- L34 MRS (JAAP-004-R-01)
- L34 Actual Trench
- Trench Start/End
- X Test Pit

Notes:

1) Trench 1 and portions of Trenches 2 through 5 were located along an abandoned rail line. Excavation with EMM would have been unsafe. Manual test pits were completed in these areas.

2) The bank of Prairie Creek in the northern portion of the MRS was steep in several areas making excavation with EMM unsafe. Trenches 2 through 12 were ceased at a safe distance from the creek bank and no trenching was completed within the creek channel.



URS



Trench and Test Pit Location Map
Joliet AAP
Joliet, Illinois

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Figure 3-4

4.1 NATURE AND EXTENT OF MEC

The RI covered the entire 3.5-acre MRS using a combination of investigative trenches and test pits to depths of 24 inches bgs. A total of 3,300 linear feet of trenches and 18 test pits were excavated and inspected by UXO Technicians at L34. No MEC or evidence of MC contamination (e.g., burned material or exposed filler from broken MEC) was identified during RI fieldwork.

Pieces of ceramic and glass from demilitarized M5 mines were identified throughout the site, inspected, and classified as material documented as safe (MDAS). MDAS items recovered from the investigative trenches and test pits were encountered from the ground surface to approximately 24 inches bgs. Trench bottoms, at a depth of 24 inches bgs, were inspected and found to be free of MDAS. Other debris encountered during the investigative trenching included railroad ties/spikes, fencing, and wire. The category of debris recovered from each trench is summarized in **Table 4-1**.

4.2 FATE AND TRANSPORT OF MEC

No MEC has been recovered at the L34 MRS to date; therefore, an evaluation of MEC fate and transport was not completed.

**TABLE 4-1
TRENCH RESULTS**

	Date Investigated	Total Depth Investigated (inches)	Category of Debris Recovered (0 - 12 inches)	Category of Debris Recovered (12 - 24 inches)
Trench 01*	10/20/2015	24	None	None
Trench 02*	10/15/2015	24	MDAS	MDAS
Trench 03*	10/15/2015	24	MDAS, Other Debris	MDAS, Other Debris
Trench 04*	10/16/2015	24	MDAS, Other Debris	MDAS
Trench 05*	10/17/2015	24	MDAS, Other Debris	MDAS
Trench 06	10/17/2015	24	MDAS	MDAS
Trench 07	10/19/2015	24	MDAS, Other Debris	MDAS, Other Debris
Trench 08	10/19/2015	24	MDAS, Other Debris	MDAS, Other Debris
Trench 09	10/19/2015	24	MDAS	MDAS, Other Debris
Trench 10	10/19/2015	24	MDAS, Other Debris	MDAS
Trench 11	10/19/2015	24	MDAS	MDAS
Trench 12	10/15/2015	24	MDAS	MDAS
Trench 13	10/15/2015	24	Other Debris	MDAS
Trench 14	10/15/2015	24	MDAS, Other Debris	MDAS
Trench 15	10/15/2015	24	Other Debris	MDAS

Notes:

* Hand dug test pits completed in inaccessible areas along abandoned railroad beds.

MDAS = material documented as safe

5.1 REVISED MEC CSM

RI activities at the L34 MRS were designed to provide data to support an assessment of hazards associated with potential MEC impacts. The MEC CSM for the L34 MRS was revised based on results from this RI and information from previous investigations and previous removal actions. No MEC source has been identified, so only incomplete pathways exist at the L34 MRS.

5.1.1 MEC Exposure Analysis

As discussed in Chapter 12, Risk Characterization, of Engineering Manual 1110-1-4009 (USACE 2007), MEC exposure pathways and potential explosives safety hazards are dependent on three critical elements:

- MEC presence/source
- MEC exposure receptors
- Interaction between source and receptor

A completed pathway, indicating a MEC hazard, can only exist if all three elements are present. Risk management response actions can be developed and implemented effectively based on each of the three elements; therefore, an understanding of these elements as they pertain to the MRS where MEC was encountered is necessary. These elements are discussed in more detail below.

5.1.1.1 Presence and Source of MEC

The primary factors affecting hazards associated with MEC sources are the quantity and density of MEC. The more MEC that is present, the greater likelihood of interaction with a receptor. Additionally, the following factors must also be taken into consideration with respect to military munitions: munitions type (high explosive, practice, etc.), fuzed/unfuzed items, low order/incomplete detonations, UXO items, and discarded military munitions items. The L34 MRS was reportedly used as a disposal area for demilitarized ceramic mines; however, MEC was not identified at the MRS during this RI nor during previous investigations and removal actions completed at the site (EODT 2001, MKM 2010).

5.1.1.2 Receptors

MEC exposure receptors were considered by weighing the exposure media and accessibility against the range of potential activities and uses that are likely to occur at the MRS. These receptors include site workers (i.e., MNTP volunteers), employees (i.e., MNTP employees), visitor/trespassers, and construction workers. The types of activities that site workers and employees engage in are expected to be similar, but the duration of exposure and frequency would differ.

5.1.1.3 Activity

The site worker, employee, and construction worker exposure pathways may include planting, farming/ranching, weeding, maintaining and constructing trails and infrastructures, burning, and tilling to 12 inches. The visitor and trespasser exposure pathways may include recreation (e.g., field trips, camping, and trail activities). Restrictions are in place to prevent residential land use; therefore, residents are not considered potential receptors. Restrictions are specified in the 1998 ROD which indicates that land designated for the USDA cannot be used for industrial or residential use.

5.1.1.4 Access

The former JOAAP installation is fenced along the perimeter, limiting general public access. However, visitors (e.g., hikers, hunters) can access the installation using a walk-through gate at the Chicago Road entrance on the northern boundary, approximately 1.5 miles from the L34 MRS. The L34 MRS is surrounded by MNTP land that is not open to visitors, but the site is not fenced and receptors could access the site.

5.1.2 MEC Exposure Conclusions

Data collected during this RI were used to revise the current CSM for the L34 MRS and to identify all complete, potentially complete, or incomplete source-receptor interactions for current and anticipated future land uses. Based on the RI results and the results of previous investigations and removal actions (EODT 2001, MKM 2010), MEC explosive hazards are not present. Incomplete pathways are identified for all receptors accessing surface or subsurface soils. The revised MEC CSM presenting the exposure pathway analysis for the L34 MRS is presented as **Figure 5-1**.

5.1.3 Uncertainties with Revised MEC CSM

The DQO process develops an investigation that adequately characterizes and defines the hazards/risks posed at a site. Project DQOs and data quality standards developed for the RI were achieved. However, there are minimal levels of uncertainties associated with the RI results at the L34 MRS.

The L34 MRS was successfully investigated to 24 inches bgs via investigative trenching and test pits, and no MEC items were found during the RI field activities. In addition, the top 12 inches bgs at the entire MRS were previously excavated and sifted, and no MEC items were found during that operation. The removal action completed at the L34 MRS processed material through a sift plant that included a 1-inch screen. The 1-inch screen should have removed all items greater than 1 inch within the top 12 inches of soil; however, pieces of ceramic / glass mines greater than 1 inch were recovered from the top 12 inches of soil during the investigative trenching operation. The size of ceramic / glass MDAS remaining in the top 12 inches of soil contributes to the uncertainty remaining at the MRS. Although some uncertainty remains, these results significantly reduce uncertainty as to whether MEC is present at the L34 MRS; therefore, the presence of an explosive hazard is not reasonably anticipated and is unlikely.

5.2 REVISED MC CONCEPTUAL SITE MODEL

RI activities at the L34 MRS were designed to provide data to support assessment of risks associated with potential MC. The revised MC CSM identifies only incomplete pathways between MC sources and receptors at the MRS. The MC CSM for the L34 MRS was revised based on results from this RI and information from previous investigations. Only incomplete pathways exist because no source of MC (e.g., MEC with exposed filler or burned material) was encountered at the L34 MRS during the RI. In addition, MEC with exposed explosive filler was not encountered during any previous investigation or removal action. However, a former source of contamination (i.e., burned material) was excavated and transported off-site for disposal during the previous removal action. The revised MC CSM presenting the exposure pathway analysis for the L34 MRS is presented as **Figure 5-2**.

FIGURE 5-1
REVISED MEC CONCEPTUAL SITE MODEL (GRAPHICAL)

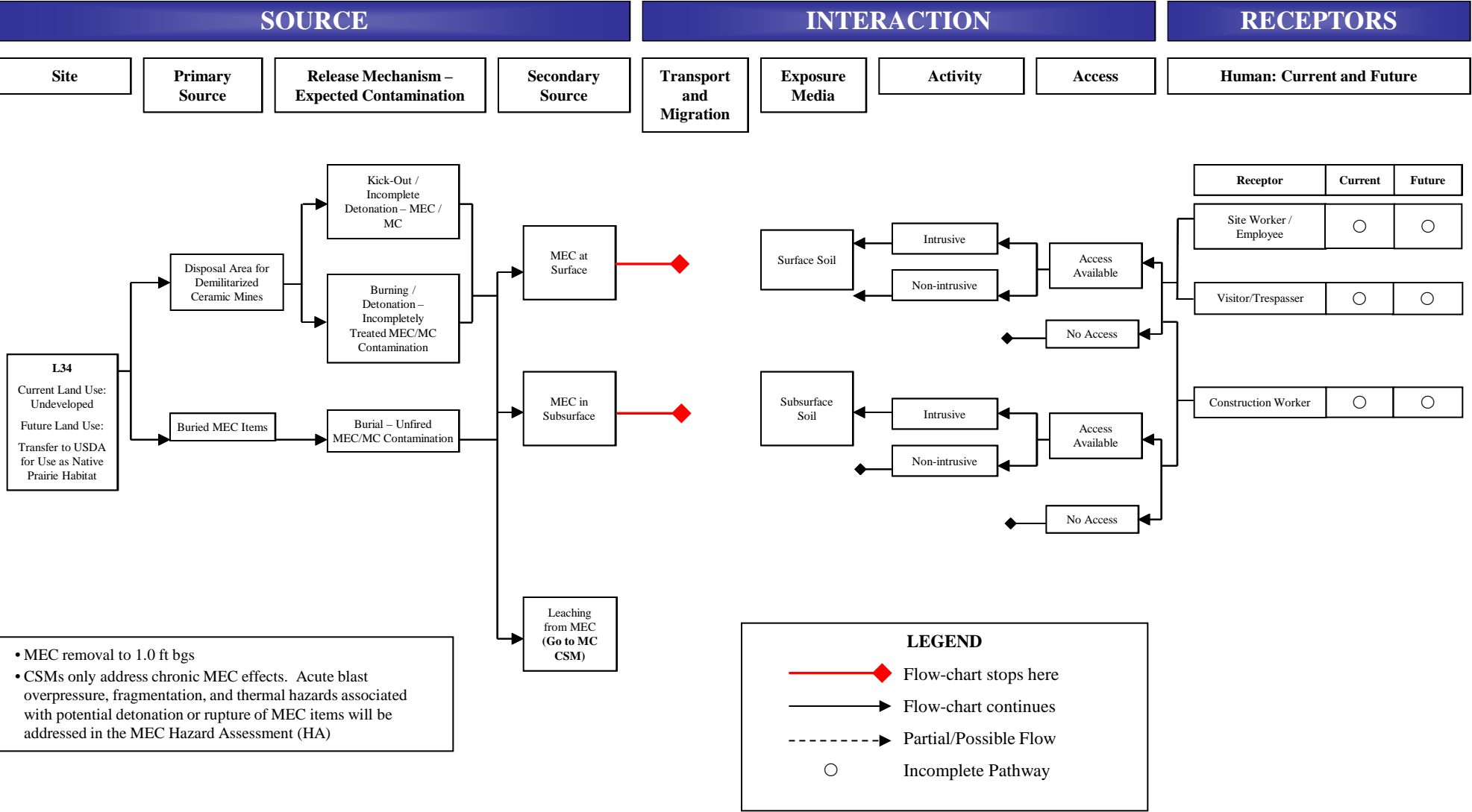
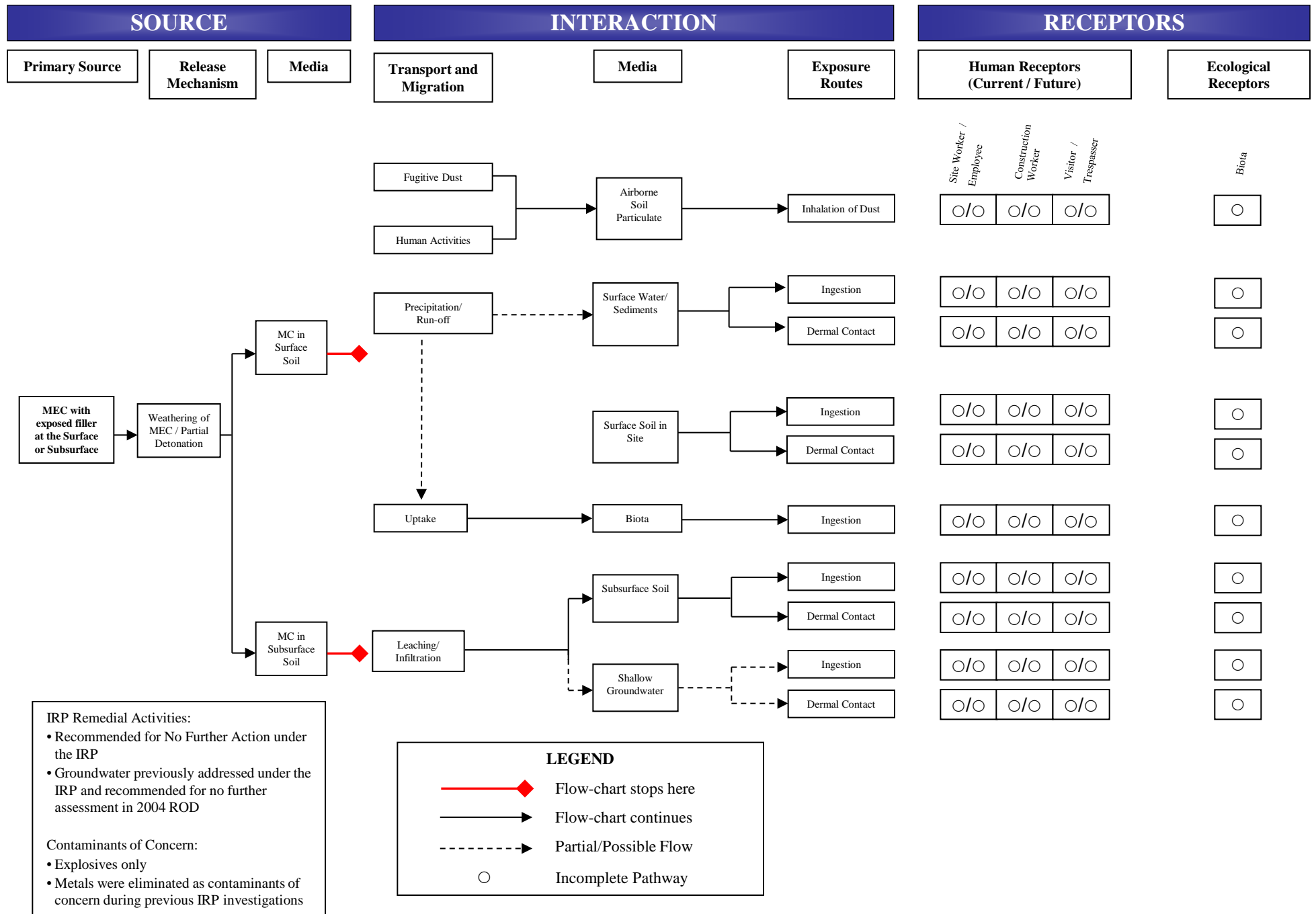


FIGURE 5-2
REVISED MC CONCEPTUAL SITE MODEL (GRAPHICAL)



6.1 MEC HA

A MEC HA is performed based on the results of field activities. It evaluates the potential risk associated with MEC encountered at an MRS, but MEC was not encountered at the L34 MRS during this RI or during previous removal actions. The revised CSM indicates incomplete exposure pathways for receptors to interact with MEC at this MRS. Therefore, the MEC HA Level Category ratings are not applicable.

6.2 MUNITIONS RESPONSE SITE PRIORITIZATION PROTOCOL

The MRSPP worksheet tables were applied to the L34 MRS, in accordance with 32 Code of Federal Regulations (CFR) Part 179 and the guidance provided in the DoD MRSPP Draft Primer (DoD 2007). The MRSPP worksheet tables are provided in **Appendix F**.

The DoD proposed the MRSPP (32 CFR Part 179) to assign a relative risk priority to each MRS in the MMRP Inventory for response activities. This priority is based on the overall condition of each MRS and takes into consideration various factors related to explosive and environmental hazards. Relative priorities are assigned on a scale ranging from 1 to 8. Priority 1 indicates the highest potential hazard, and Priority 8 indicates the lowest potential hazard. Under certain circumstances, a non-numerical alternative priority rating may also be assigned to an MRS. Because no explosive or environmental hazards are present at the L34 MRS, the MRSPP rating for the MRS is No Known or Suspected Hazard.

7.1 SUMMARY OF RI ACTIVITIES

This RI compiled and evaluated information about the L34 MRS relating to the possible presence of MEC and associated contamination of environmental media from MC. The RI included investigative trenching and test pits to allow for MPPEH inspection of subsurface soil. This information was evaluated and used to determine if MEC (non-metallic mines or other) is present, interpret the nature and extent of MEC and MC (if present), refine the CSMs for potential exposures to MEC and MC, assess MEC hazards, and update the MRSP tables.

7.2 SUMMARY OF RI FINDINGS

The RI resulted in the collection, synthesis, and evaluation of a large amount of information regarding past military munitions-related activities at L34, current on-site conditions with respect to the nature and extent of MEC and MC, and physical setting and land use of L34. A summary of the findings for the L34 MRS is provided below.

- **Type:** Disposal area for demilitarized ceramic mines
- **Size:** 3.5 acres
- **Ownership:** U.S. Army-owned, pending transfer to USDA
- **Topography:** Relatively flat
- **Vegetative Cover:** Tall grass and dense brush in some areas
- **Soil Type:** Clayey silt with minor sand
- **Features:** The site is relatively flat, sloping slightly to Prairie Creek. Steep drop-offs are present along Prairie Creek at the northern MRS boundary. Abandoned railroad embankments are present along the western and southwestern borders of the MRS.
- **Access:** Moderate
- **Investigative Trenching:** Approximately 3,300 linear feet of trenching was completed to a depth of 24 inches bgs. Trenches were spaced approximately 30 feet apart across the entire MRS and were 3 feet wide. In addition, 18 test pits were manually dug along planned trenches that could not be safely excavated with EMM.
- **MEC/MDAS:** No MEC items were recovered during the RI. MDAS encountered during trenching activities was limited to pieces of ceramic and glass M5 mines.
- **MC Sampling Media:** No MEC with exposed filler or burned material was identified during RI field activities; therefore, MC sampling was not necessary.
- **MEC HA Hazard Level Category:** MEC has not been documented at L34; therefore, a MEC HA was not completed.

7.3 CONCLUSIONS AND RECOMMENDATIONS

The L34 MRS has been sufficiently characterized using the results from this RI and previous investigations and removal actions. No MEC (non-metallic mines or other) has been identified in surface or subsurface soil at the L34 MRS. In addition, potential sources of MC contamination (e.g., MEC items with exposed explosive filler, burned material) were not identified during RI fieldwork, so MC sampling was not necessary.

A MEC HA Level Category rating is not applicable to the L34 MRS because no MEC has been found. The MRSP rating is No Known or Suspected Hazard.

Based on the results of this RI, previous investigations, and removal actions, MEC and MC do not pose an unacceptable potential hazard/risk to current and future receptors at the L34 MRS. Therefore, the L34 MRS is recommended for an NFA Proposed Plan and ROD.

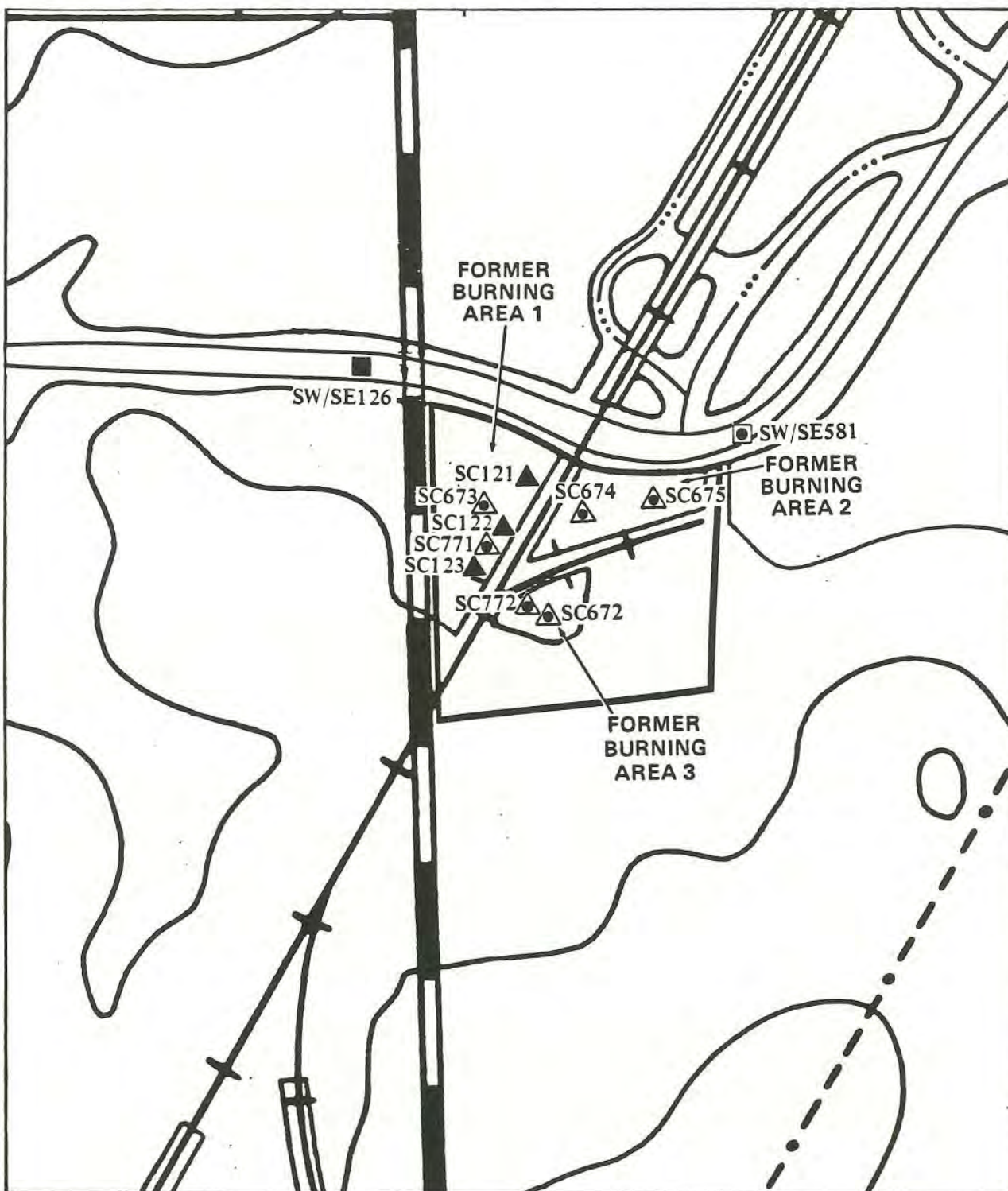
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APPENDIX A

Historical Site Data (provided on CD)

**Final Phase I Remedial Investigation Results Report, Load-Assemble-Package (LAP)
Area, Joliet Army Ammunition Plant, Joliet, Illinois**

Dames & Moore. July 1993.



LEGEND:

- ▲ Existing soil core sample location
- Existing surface water/sediment sample location
- ▲ PH1 RI soil core sample location
- PH1 RI surface water/sediment sample location



FIGURE 5.27-1
PH1 RI AND PREVIOUS INVESTIGATION SAMPLE LOCATIONS
SITE L34 - JAAP
FORMER BURNING AREA

PH1 RI
 5-741 Dames & Moore

TABLE 5.27-1

PH1 RI SAMPLING PROGRAM
Former Burning Area, Site L34

Total Samples (b)	Sample Number	Depth (ft) or Aquifer	Analytes (a)						PCBs/ Pesticides	Duplicates
			Explosives	Anions	Metals	VOCs	BNAs			
18 SC	SC672 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X	SC672AD (d)	
	SC673 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X		
	SC674 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X		
	SC675 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X	SC771AD (d)	
	SC771 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X		
	SC772 A, B, C	0, 2.5, 5.0	X	X	X	X	X	X		
1 SW 2 SE	SW/SE581	Sediment sampled at 0 and 2.5 feet	X	X	X	X	X	X (c)	SW581D (d)	

(a) Analyte abbreviations--

VOCs=Volatile Organic Compounds

BNAs=Base Neutral and Acid Extractable Compounds

PCBs=Polychlorinated Biphenyls

(b) Sample identifiers--

SC=Soil Core

SW=Surface Water

SE=Sediment

(c) PCBs/pesticides analyzed in sediment only.

(d) Duplicate analyzed for same constituents
as the associated sample.

Table 5.27-2
Summary of Positive Detections for Explosives and BNAs
Site L34, Former Burning Area
Soil--ug/g

Sample ID:	SC121B	SC122A	SC122B	SC122C	SC123A	SC123B	SC123C
Sample Date:	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81
Depth(feet):	0.5	0.0	1.0	1.9	0.0	0.6	1.2
	L V	L V	L V	L V	L V	L V	L V
<u>EXPLOSIVES</u>							
2,4,6-TRINITROTOLUENE	NT	NT	NT	3.000	NT	NT	NT
2-NITROTOLUENE	2.000	NT	NT	NT	NT	NT	NT
3-NITROTOLUENE	1.000	NT	NT	NT	NT	NT	NT
<u>BNAs</u>							
B2EHP	10.000	2.000	2.000	9.000	2.000	3.000	2.000
FLUORANTHENE	NT	NT	NT	NT	NT	NT	NT
PHENANTHRENE	NT	NT	NT	NT	NT	NT	NT
PYRENE	NT	NT	NT	NT	NT	NT	NT

PHI RI
5-744

Sample ID:	SC672A	SC672AD	SC672B	SC672C	SC673A	SC673B	SC673C
Sample Date:	11/04/91	11/04/91	11/04/91	11/04/91	11/04/91	11/04/91	11/05/91
Depth(feet):	0.0	0.0	2.5	5.0	0.0	2.5	4.0
	L V	L V	L V	L V	L V	L V	L V
<u>EXPLOSIVES</u>							
2,4,6-TRINITROTOLUENE	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456
2-NITROTOLUENE	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307
3-NITROTOLUENE	NT	NT	NT	NT	NT	NT	NT
<u>BNAs</u>							
B2EHP	LT 3.100	LT 3.100	LT 0.620	LT 0.620	LT 3.100	LT 3.100	LT 0.620
FLUORANTHENE	0.745	0.750	LT 0.068	LT 0.068	LT 0.340	LT 0.340	LT 0.068
PHENANTHRENE	LT 0.165	0.401	LT 0.033	LT 0.033	LT 0.165	LT 0.165	LT 0.033
PYRENE	0.761	0.765	LT 0.033	LT 0.033	LT 0.165	LT 0.165	LT 0.033

Table 5.27-2 (cont'd)

Sample ID:	SC674A	SC674B	SC674C	SC675A	SC675B	SC675C	SC771A
Sample Date:	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91	11/04/91
Depth(feet):	0.0	2.5	5.0	0.0	2.5	5.0	0.0
	L V	L V	L V	L V	L V	L V	L V
<u>EXPLOSIVES</u>							
2,4,6-TRINITROTOLUENE	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456
2-NITROTOLUENE	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307
3-NITROTOLUENE	NT	NT	NT	NT	NT	NT	NT
<u>BNAs</u>							
B2EHP	LT 3.100	LT 0.620	LT 0.620	LT 3.100	LT 0.620	LT 0.620	LT 0.620
FLUORANTHENE	LT 0.340	LT 0.068	LT 0.068	LT 0.340	LT 0.068	LT 0.068	LT 0.068
PHENANTHRENE	LT 0.165	LT 0.033	LT 0.033	LT 0.165	LT 0.033	LT 0.033	LT 0.033
PYRENE	LT 0.165	LT 0.033	LT 0.033	LT 0.165	LT 0.033	LT 0.033	LT 0.033

Sample ID:	SC771AD	SC771B	SC771C	SC772A	SC772B	SC772C
Sample Date:	11/04/91	11/04/91	11/05/91	11/04/91	11/04/91	11/04/91
Depth(feet):	0.0	2.5	5.0	0.0	2.5	5.0
	L V	L V	L V	L V	L V	L V
<u>EXPLOSIVES</u>						
2,4,6-TRINITROTOLUENE	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456	LT 0.456
2-NITROTOLUENE	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307	LT 0.307
3-NITROTOLUENE	NT	NT	NT	NT	NT	NT
<u>BNAs</u>						
B2EHP	LT 0.620	0.929	LT 0.620	LT 0.620	LT 0.620	LT 0.620
FLUORANTHENE	LT 0.068	LT 0.068	LT 0.068	LT 0.068	LT 0.068	LT 0.068
PHENANTHRENE	LT 0.033	LT 0.033	LT 0.033	LT 0.033	LT 0.033	LT 0.033
PYRENE	LT 0.033	LT 0.033	LT 0.033	LT 0.033	LT 0.033	LT 0.033

Booleans:

LT--Less than the maximum certified limit

NT--Not tested

Laboratory (L) and Validation (V) Flags:

B--Analyte found in blank as well as sample

PH1 RI
5-745

Table 5.27-3
Summary of Positive Detections for Pesticides/PCBs
Site L34, Former Burning Area
Soil--ug/g

Sample ID:	SC672A		SC672AD		SC672B		SC672C		SC673A		SC673B		SC673C	
Sample Date:	11/04/91		11/04/91		11/04/91		11/04/91		11/04/91		11/04/91		11/05/91	
Depth(feet):	0.0		0.0		2.5		5.0		0.0		2.5		4.0	
	L V		L V		L V		L V		L V		L V		L V	
DDT	LT	0.007	LT	0.007	LT	0.007	LT	0.007	0.006 P	LT	0.007	LT	0.007	
DDE		0.005 P		0.003 P	LT	0.008	LT	0.008	0.002 P	LT	0.008	LT	0.008	
PCB 1260	LT	0.080	LT	0.080	LT	0.080	LT	0.080	0.044 P	LT	0.080		0.053 P	

Sample ID:	SC674A		SC674B		SC674C		SC675A		SC675B		SC675C		SC771A	
Sample Date:	11/05/91		11/05/91		11/05/91		11/05/91		11/05/91		11/05/91		11/04/91	
Depth(feet):	0.0		2.5		5.0		0.0		2.5		5.0		0.0	
	L V		L V		L V		L V		L V		L V		L V	
DDT	LT	0.007	LT	0.007	LT	0.007	LT	0.007	LT	0.007	LT	0.007	LT	0.007
DDE	LT	0.008	LT	0.008	LT	0.008	LT	0.008	LT	0.008	LT	0.008	LT	0.008
PCB 1260	LT	0.080	LT	0.080	LT	0.080	LT	0.080	LT	0.080	LT	0.080	LT	0.080

Sample ID:	SC771AD	SC771B	SC771C	SC772A	SC772B	SC772C
Sample Date:	11/04/91	11/04/91	11/05/91	11/04/91	11/04/91	11/04/91
Depth(feet):	0.0	2.5	5.0	0.0	2.5	5.0
	L V		L V		L V	
DDT	LT	0.007	LT	0.007	LT	0.007
DDE	LT	0.008	LT	0.008	LT	0.008
PCB 1260	LT	0.080	LT	0.080	LT	0.080

Booleans:
 LT--Less than the maximum certified limit
 NT--Not tested

Laboratory (L) and Validation (V) Flags:
 P--Results less than CRL but greater than MDL.

PH1 RI
 5-746

Table 5.27-4
Summary of Positive Detections for Anions and Metals
L-34, Former Burning Area
Soil, ug/g

Sample ID:	SC121	SC121	SC121	SC122	SC122	SC122	SC123
Sample Date:	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81	06/09/81
Depth(feet):		0.5	1.0		1.0	1.9	
	L V	L V	L V	L V	L V	L V	L V
ANIONS							
NITRATE/NITRITE	NT	NT	NT	NT	NT	NT	NT
PHOSPHATE	23124.998	LT 17.000	NT	34874.996	38374.996	344.048	28624.998
SULFATE	14888.890	26555.557	27111.111	17333.334	19000.000	26888.891	LT 75.000
TOTAL PHOSPHATES	NT	NT	NT	NT	NT	NT	NT
METALS							
ALUMINUM	NT	NT	NT	NT	NT	NT	NT
ANTIMONY	NT	NT	NT	NT	NT	NT	NT
ARSENIC	190.000	8.408	9.810	110.000	8.809	LT 8.200	100.000
BARIUM	NT	NT	NT	NT	NT	NT	NT
BERYLLIUM	NT	NT	NT	NT	NT	NT	NT
CADMIUM	LT 6.900	LT 6.900	NT	LT 6.900	LT 6.900	LT 6.900	LT 6.900
CALCIUM	NT	NT	NT	NT	NT	NT	NT
CHROMIUM	590.909	629.293	569.697	658.586	610.101	591.919	592.929
COBALT	NT	NT	NT	NT	NT	NT	NT
COPPER	470.833	497.917	433.333	419.792	420.833	389.583	722.917
IRON	31100.000	30100.000	27800.000	32500.000	30500.000	28200.000	30500.000
LEAD	246.392	267.010	211.340	205.155	185.567	187.629	540.206
MAGNESIUM	NT	NT	NT	NT	NT	NT	NT
MANGANESE	55888.891	58333.336	51666.668	57333.336	62777.781	56000.000	93111.117
MERCURY	LT 1.300	LT 1.300	LT 1.300	LT 1.300	LT 1.300	LT 1.300	LT 1.300
NICKEL	NT	NT	NT	NT	NT	NT	NT
POTASSIUM	NT	NT	NT	NT	NT	NT	NT
SELENIUM	NT	NT	NT	NT	NT	NT	NT
SILVER	NT	NT	NT	NT	NT	NT	NT
SODIUM	NT	NT	NT	NT	NT	NT	NT
THALLIUM	NT	NT	NT	NT	NT	NT	NT
VANADIUM	NT	NT	NT	NT	NT	NT	NT
ZINC	NT	NT	NT	NT	NT	NT	NT

PH1 RI
5-747

Table 5.27-4 Cont.

Sample ID:	SC123	SC123	SC672A	SC672AD	SC672B	SC672C	SC673A
Sample Date:	06/09/81	06/09/81	11/04/91	11/04/91	11/04/91	11/04/91	11/04/91
Depth(feet):	0.6	1.2	0.0	0.0	2.5	5.0	0.0
	L V	L V	L V	L V	L V	L V	L V
ANIONS							
NITRATE/NITRITE	NT	NT	2.680	1.110	LT 0.600	0.819	1.260
PHOSPHATE	LT 17.000	1161.905	NT	NT	NT	NT	NT
SULFATE	LT 75.000	NT	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400
TOTAL PHOSPHATES	NT	NT	283.000	298.000	293.000	306.000	355.000
METALS							
ALUMINUM	NT	NT	11400.000	10700.000	12500.000	11000.000	9200.000
ANTIMONY	NT	NT	LT 7.140	LT 7.140	LT 7.140	LT 7.140	LT 7.140
ARSENIC	120.000	120.000	11.400	10.600	11.500	14.000	10.200
BARIUM	NT	NT	57.400	57.900	57.600	53.200	99.600
BERYLLIUM	NT	NT	LT 0.500	LT 0.500	LT 0.500	LT 0.500	LT 0.500
CADMIUM	LT 6.900	NT	LT 0.700	LT 0.700	LT 0.700	LT 0.700	1.060
CALCIUM	NT	NT	71000.000	64900.000	67000.000	63000.000	32000.000
CHROMIUM	559.596	493.939	20.200	19.300	23.000	20.700	17.100
COBALT	NT	NT	11.600	12.900	10.500	14.700	9.780
COPPER	563.542	535.417	20.500	19.400	21.800	21.100	23.300
IRON	32500.000	27000.000	20300.000	19100.000	21600.000	21100.000	18100.000
LEAD	258.763	261.856	19.700	21.200	11.600 P	10.900 P	50.700
MAGNESIUM	NT	NT	33200.000	33000.000	29500.000	29600.000	20300.000
MANGANESE	108888.891	94555.555	529.000	617.000	402.000	456.000	630.000
MERCURY	LT 1.300	LT 1.300	0.022 P	LT 0.050	LT 0.050	LT 0.050	0.035 P
NICKEL	NT	NT	27.600	27.800	27.900	32.000	21.000
POTASSIUM	NT	NT	2670.000	2510.000	2880.000	2310.000	1260.000
SELENIUM	NT	NT	LT 0.250	LT 0.250	LT 0.250	LT 0.250	0.199 P
SILVER	NT	NT	LT 0.025	0.031 P	LT 0.025	LT 0.025	0.210
SODIUM	NT	NT	383.000	385.000	363.000	345.000	282.000
THALLIUM	NT	NT	21.900	18.700	25.600	23.100	17.500
VANADIUM	NT	NT	33.000	31.400	33.700	30.000	26.500
ZINC	NT	NT	70.100	70.100	63.600	66.300	150.000

PH1 RI
5-748

Table 5.27-4 Cont.

Sample ID:	SC673B	SC673C	SC674A	SC674B	SC674C	SC675A	SC675B
Sample Date:	11/04/91	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91
Depth(feet):	2.5	4.0	0.0	2.5	5.0	0.0	2.5
	L V	L V	L V	L V	L V	L V	L V
ANIONS							
NITRATE/NITRITE	1.680	1.220	2.670	3.550	3.970	4.440	4.010
PHOSPHATE	NT	NT	NT	NT	NT	NT	NT
SULFATE	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400
TOTAL PHOSPHATES	287.000	288.000	319.000	260.000	242.000	313.000	361.000
METALS							
ALUMINUM	14200.000	10200.000	9780.000	12000.000	14400.000	12700.000	12700.000
ANTIMONY	6.400 P	LT 7.140	LT 7.140	LT 7.140	LT 7.140	LT 7.140	LT 7.140
ARSENIC	10.800	12.500	12.100	11.400	11.800	10.900	13.600
BARIUM	174.000	62.300	84.600	130.000	130.000	121.000	117.000
BERYLLIUM	LT 0.500	LT 0.500	0.606 P	LT 0.500	1.080	0.729	1.120
CADMIUM	2.020	LT 0.700	LT 0.700	LT 0.700	LT 0.700	LT 0.700	0.596 P
CALCIUM	15100.000	68000.000	45600.000	5490.000	6730.000	4560.000	7040.000
CHROMIUM	24.900	19.200	16.700	19.700	21.700	21.500	19.200
COBALT	12.800	12.700	12.600	15.200	5.640	13.200	13.600
COPPER	54.100	22.500	20.700	21.700	25.100	24.100	21.500
IRON	24800.000	21000.000	19700.000	24500.000	15400.000	24500.000	42500.000
LEAD	149.000	16.000	18.700	18.600	17.100	23.600	17.400
MAGNESIUM	10300.000	28900.000	28600.000	3900.000	4720.000	4080.000	4580.000
MANGANESE	744.000	461.000	687.000	1050.000	98.200	726.000	149.000
MERCURY	0.069 P	0.020 P	0.025 P	0.022 P	0.026 P	0.026 P	0.024 P
NICKEL	27.700	30.200	24.700	27.500	19.900	28.500	27.000
POTASSIUM	1430.000	1540.000	1200.000	1380.000	958.000	1420.000	799.000
SELENIUM	LT 0.250	LT 0.250	0.169 P	0.263 P	LT 0.250	0.273 P	LT 0.250
SILVER	0.317	LT 0.025	0.052	0.043	0.075	0.074	0.076
SODIUM	302.000	341.000	297.000	287.000	308.000	235.000	281.000
THALLIUM	18.600	20.800	20.300	22.400	12.000	18.300	31.600
VANADIUM	38.900	27.800	29.400	33.900	26.100	35.500	40.400
ZINC	361.000	68.100	81.500	74.700	97.400	104.000	94.500

PH1 RI
5-749

Table 5.27-4 Cont.

Sample ID:	SC675C	SC771A	SC771AD	SC771B	SC771C	SC772A	SC772B
Sample Date:	11/05/91	11/04/91	11/04/91	11/04/91	11/05/91	11/04/91	11/04/91
Depth(feet):	5.0	0.0	0.0	2.5	5.0	0.0	2.5
	L V	L V	L V	L V	L V	L V	L V
ANIONS							
NITRATE/NITRITE	1.200	1.810	2.050	7.900	0.816	0.788	LT 0.600
PHOSPHATE	NT	NT	NT	NT	NT	NT	NT
SULFATE	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400	LT 90.400
TOTAL PHOSPHATES	278.000	230.000	220.000	268.000	315.000	329.000	233.000
METALS							
ALUMINUM	7150.000	15800.000	13400.000	17200.000	14500.000	12700.000	9390.000
ANTIMONY	LT 7.140	LT 7.140	LT 7.140	6.200 P	LT 7.140	LT 7.140	LT 7.140
ARSENIC	12.200	13.500	13.400	10.400	11.400	14.700	18.000
BARIUM	36.100	144.000	134.000	159.000	70.100	61.700	47.800
BERYLLIUM	LT 0.500	1.030	0.722	1.120	1.000	LT 0.500	LT 0.500
CADMIUM	LT 0.700	LT 0.700	0.546 P	2.060	LT 0.700	LT 0.700	LT 0.700
CALCIUM	65000.000	4760.000	3990.000	12000.000	73000.000	75000.000	53000.000
CHROMIUM	13.900	24.900	23.500	29.500	24.900	21.600	18.500
COBALT	12.800	15.600	14.400	15.000	13.000	13.700	15.300
COPPER	19.300	26.900	26.800	42.200	22.700	22.500	41.700
IRON	20800.000	25600.000	24000.000	25100.000	23100.000	23000.000	26500.000
LEAD	10.300 P	44.900	46.200	84.300	10.800 P	16.000	23.900
MAGNESIUM	38700.000	4790.000	3790.000	8700.000	31200.000	31600.000	24100.000
MANGANESE	592.000	1150.000	1060.000	1150.000	455.000	561.000	435.000
MERCURY	LT 0.050	0.030 P	0.027 P	0.045 P	LT 0.050	LT 0.050	0.024 P
NICKEL	27.100	28.000	26.400	28.400	32.200	33.500	37.200
POTASSIUM	1750.000	2280.000	1830.000	2490.000	3250.000	2990.000	1480.000
SELENIUM	LT 0.250	LT 0.250	0.212 P	LT 0.250	LT 0.250	LT 0.250	LT 0.250
SILVER	0.026 P	0.107	0.100	0.150	LT 0.025	LT 0.025	LT 0.025
SODIUM	337.000	238.000	226.000	288.000	380.000	324.000	280.000
THALLIUM	24.800	18.800	23.700	21.300	32.200	30.800	27.400
VANADIUM	24.000	42.100	36.900	47.500	38.000	35.000	26.000
ZINC	71.400	115.000	126.000	169.000	77.200	73.500	88.600

PH1 RI
S-750

Table 5.27-4 Cont.

Sample ID: SC772C
 Sample Date: 11/04/91
 Depth(feet): 5.0

L V

ANIONS

NITRATE/NITRITE		1.090
PHOSPHATE		NT
SULFATE	LT	90.400
TOTAL PHOSPHATES		294.000

METALS

ALUMINUM		8700.000
ANTIMONY	LT	7.140
ARSENIC		13.700
BARIUM		39.500
BERYLLIUM		0.557 P
CADMIUM	LT	0.700
CALCIUM		88000.000
CHROMIUM		17.300
COBALT		9.310
COPPER		24.300
IRON		18400.000
LEAD		12.300 P
MAGNESIUM		41000.000
MANGANESE		337.000
MERCURY		0.020 P
NICKEL		23.200
POTASSIUM		2200.000
SELENIUM	LT	0.250
SILVER	LT	0.025
SODIUM		285.000
THALLIUM		26.900
VANADIUM		24.900
ZINC		61.300

Booleans:

LT--Less than the maximum certified limit

NT--Not tested

Laboratory (L) and Validation (V) Flags:

B--Analyte found in blank as well as sample

P--Result less than CRL but greater than MDL.

Sample I.D. ending in "D" indicates duplicate sample

Values for nitrate/nitrite collected in 1991 represent water soluble nitrate/nitrite concentrations.

Values for sulfate collected in 1991 represent water soluble sulfate concentrations.

Values for total phosphates collected in 1991 represent total phosphorous concentrations.

5-751
PH1 RI

Table 5.27-5
Summary of Positive Detections for Tentatively Identified Compounds
L-34, Former Burning Grounds
Soil--ug/g

Sample ID:	SC672C	SC673A	SC674A	SC674B	SC674C	SC675B	SC675C
Sample Date:	11/04/91	11/04/91	11/05/91	11/05/91	11/05/91	11/05/91	11/05/91
Depth(feet):	5.0	0.0	0.0	2.5	5.0	2.5	5.0
	L V	L V	L V	L V	L V	L V	L V
2TMPD	0.353 S	NT	NT	NT	NT	NT	0.484 S
UNKNOWN COMPOUND 643	NT	NT	NT	0.649 S	NT	NT	NT
UNKNOWN COMPOUND 645	NT	NT	NT	0.390 S	0.382 S	NT	NT
UNKNOWN COMPOUND 649	NT	NT	NT	0.390 S	0.764 S	NT	NT
UNKNOWN COMPOUND 651	NT	NT	NT	0.390 S	NT	NT	NT
UNKNOWN COMPOUND 653	NT	1.270 S	1.230 S	NT	NT	NT	NT
UNKNOWN COMPOUND 659	NT	NT	NT	NT	NT	0.417 S	NT
UNKNOWN COMPOUND 661	NT	0.635 S	3.070 S	0.519 S	0.637 S	NT	NT
UNKNOWN COMPOUND 662	NT	NT	NT	NT	NT	0.417 S	NT
UNKNOWN COMPOUND 666	NT	NT	NT	NT	0.510 S	NT	NT
UNKNOWN COMPOUND 672	NT	NT	NT	0.390 S	0.382 S	NT	NT
UNKNOWN COMPOUND 673	NT	NT	NT	3.900 S	0.382 S	NT	NT
UNKNOWN COMPOUND 675	NT	NT	NT	0.649 S	NT	NT	NT
UNKNOWN COMPOUND 678	NT	NT	NT	0.390 S	NT	NT	NT

Sample ID:	SC771A	SC771AD	SC771B	SC771C	SC772B
Sample Date:	11/04/91	11/04/91	11/04/91	11/05/91	11/04/91
Depth(feet):	0.0	0.0	2.5	5.0	2.5
	L V	L V	L V	L V	L V
2TMPD	NT	NT	NT	0.350 S	0.698 S
UNKNOWN COMPOUND 130	NT	NT	0.005 S	NT	NT
UNKNOWN COMPOUND 576	0.638 S	NT	NT	NT	NT
UNKNOWN COMPOUND 641	NT	NT	0.382 S	NT	NT
UNKNOWN COMPOUND 646	NT	NT	0.382 S	NT	NT
UNKNOWN COMPOUND 648	0.638 S	0.646 S	0.892 S	NT	NT
UNKNOWN COMPOUND 652	NT	NT	0.637 S	NT	NT
UNKNOWN COMPOUND 653	NT	0.646 S	NT	NT	NT
UNKNOWN COMPOUND 664	NT	NT	0.382 S	NT	NT
UNKNOWN COMPOUND 686	0.765 S	0.517 S	NT	NT	NT
UNKNOWN COMPOUND 688	NT	NT	0.637 S	NT	NT

Booleans:

NT--Not tested

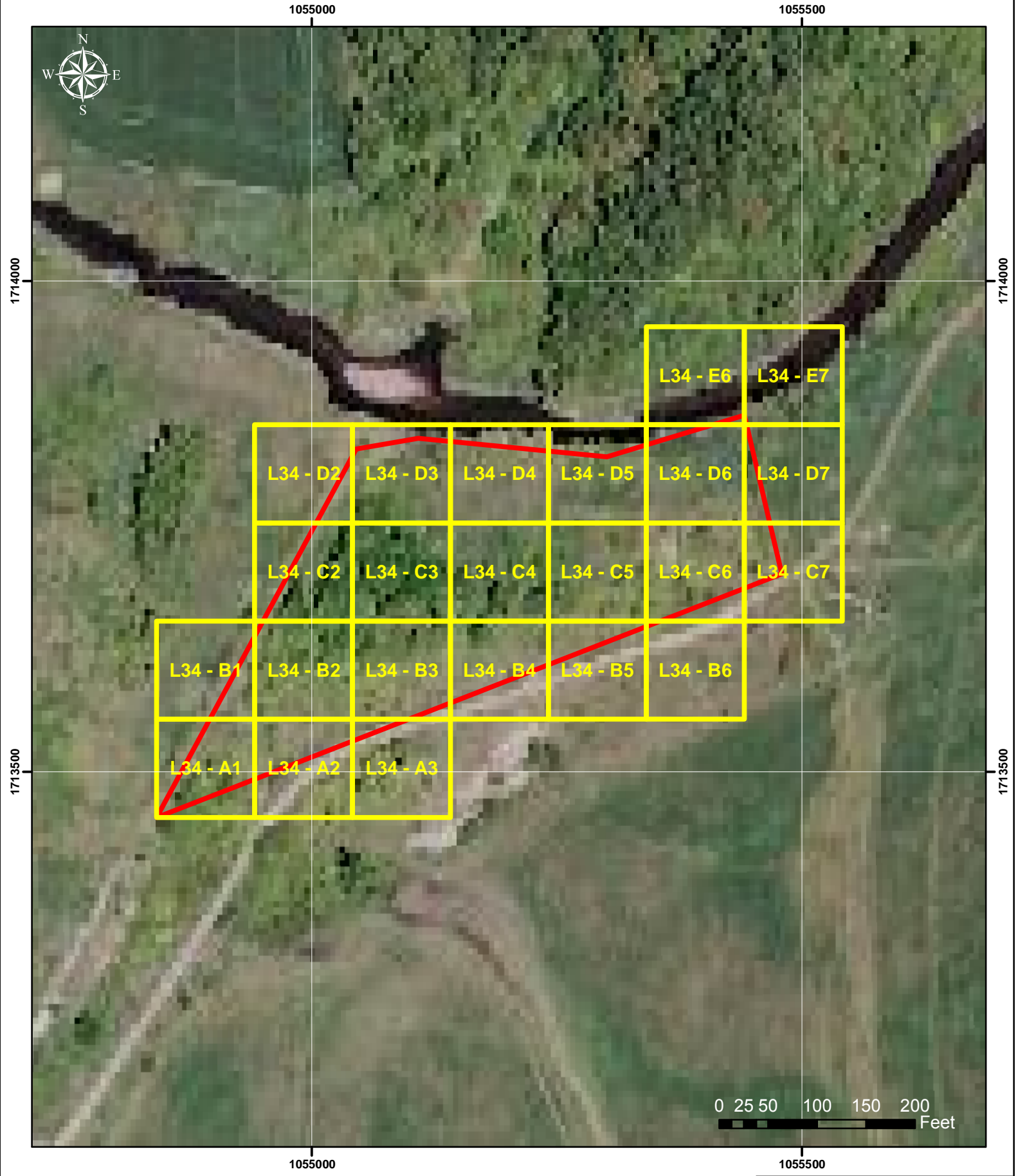
Laboratory (L) and Validation (V) Flags:

S--Result based on internal standard



PH1 RI
5-752

**Site-Specific Final Report Removal Action at Munitions Response Site L34, Joliet
Army Ammunition Plant, Will County, Illinois**

MKM Engineers, Inc. May 2010.



Legend

-  L34 Selected Grids
-  L34 Boundary



PIKA International, Inc.
12723 Capricorn Dr. Ste#500
Stafford, TX 77477



Figure 1-3 SITE L34 GRID MAP
Joliet Army Ammunition Plant
Wilmington, Illinois

Table 6-1

Acres Cleared, Total Number of Cubic Yards Sifted, Total MEC, MD and Cultural Debris Removed, and Waste Disposed of During the MEC MR

Activity	Total
Acres Cleared	3.5 Acres
Total Number of Cubic Yards (cy) Sifted	5,696 cy
Total MEC	0
MD Removed	2,531 Pounds
Cultural Debris Removed	2,583 Pounds
Soil and Rock with Burn Debris Waste Disposed	1,247 Tons



Appendix G

Analytical Data



L34 Soil Analytical Results

Sample ID	Sample Collection Date	Laboratory Name	Lab Sample ID	Analytical Method	Analyte/Parameter Name	Result	Qualifier	Units	Reporting Limit
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Chlordane (technical) TCLP	10	U	µg/L	10
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Endrin TCLP	5.0	U	µg/L	5.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Heptachlor TCLP	5.0	U	µg/L	5.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Heptachlor epoxide TCLP	5.0	U	µg/L	5.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	gamma-BHC (Lindane) TCLP	5.0	U	µg/L	5.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Methoxychlor TCLP	10	U	µg/L	10
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8081A	Toxaphene TCLP	50	U	µg/L	50
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1016	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1221	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1232	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1242	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1248	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1254	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8082	PCB-1260	16	U	µg/Kg	16
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8151	2,4-D TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8151	Silvex (2,4,5-TP) TCLP	10	U	µg/L	10
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Cresol, o- TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Cresol, p- TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	1,4-Dichlorobenzene TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	2,4-Dinitrotoluene TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Hexachlorobenzene TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Hexachloro-1,3-butadiene TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Hexachloroethane TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Nitrobenzene TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Pentachlorophenol TCLP	500	U	µg/L	500
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	Pyridine TCLP	200	U	µg/L	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	2,4,5-Trichlorophenol TCLP	500	U	µg/L	500
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8270C	2,4,6-Trichlorophenol TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Benzene TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Carbon tetrachloride TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Chlorobenzene TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Chloroform TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	1,2-Dichloroethane TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	1,1-Dichloroethene TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	2-Butanone (MEK) TCLP	100	U	µg/L	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Tetrachloroethene TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Trichloroethene TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8260B	Vinyl chloride TCLP	20	U	µg/L	20
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	1010	Flashpoint	>176		Degrees F	
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	7.4.4	Sulfide, Reactive	49	U	mg/Kg	49
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	9014	Cyanide, Reactive	0.44	U	mg/Kg	0.44
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	9045C	pH	8.46		SU	0.200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	9066	Phenolics, Total Recoverable	12		mg/Kg	0.62
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	9095A	Paint Filter	pass		mL/100g	0.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	HMX	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	RDX	200	U	µg/Kg	200



L34 Soil Analytical Results

Sample ID	Sample Collection Date	Laboratory Name	Lab Sample ID	Analytical Method	Analyte/Parameter Name	Result	Qualifier	Units	Reporting Limit
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	1,3,5-Trinitrobenzene	100	U	µg/Kg	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	1,3-Dinitrobenzene	100	U	µg/Kg	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	Nitrobenzene	100	U	µg/Kg	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	2,4,6-Trinitrotoluene	100	U	µg/Kg	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	Tetryl	250	U	µg/Kg	250
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	2,4-Dinitrotoluene	100	U	µg/Kg	100
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	2,6-Dinitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	2-Amino-4,6-dinitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	4-Amino-2,6-dinitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	2-Nitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	4-Nitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	8330	3-Nitrotoluene	200	U	µg/Kg	200
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Arsenic TCLP	0.050	U	mg/L	0.050
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Barium TCLP	0.67		mg/L	0.50
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Cadmium TCLP	0.0042	J	mg/L	0.0050
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Chromium TCLP	0.017	J	mg/L	0.025
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Lead TCLP	0.0076	J	mg/L	0.050
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Selenium TCLP	0.050	U	mg/L	0.050
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Silver TCLP	0.025	U	mg/L	0.025
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Chromium	17		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Iron	25000		mg/Kg	11
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Manganese	570		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Nickel	30		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Aluminum	11000		mg/Kg	23
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Antimony	0.83	J	mg/Kg	2.3
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Arsenic	12		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Barium	76		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Beryllium	0.71		mg/Kg	0.45
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Cadmium	0.52		mg/Kg	0.23
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Calcium	38000		mg/Kg	11
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Cobalt	12		mg/Kg	0.56
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Copper	31		mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Lead	24		mg/Kg	0.56
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Magnesium	19000		mg/Kg	11
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Potassium	2100		mg/Kg	56
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Selenium	1.1	U	mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Silver	0.56	U	mg/Kg	0.56
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Sodium	110	U	mg/Kg	110
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Thallium	0.87	J	mg/Kg	1.1
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Vanadium	25		mg/Kg	0.56
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	6010B	Zinc	89		mg/Kg	2.3
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	7470A	Mercury TCLP	2.0	U	µg/L	2.0
L34-STOCKPILE	07/19/2007	TESTAMERICA CHICAGO	500-5449-1	7471A	Mercury	0.027		mg/Kg	0.022

Biological / Ecological Site Visit

TECHNICAL MEMORANDUM

Joliet AAP, Illinois

Contract: W912DY-09-D-0061, Delivery Order CY02

Project: Joliet Army Ammunition Plant (JOAAP) Time Critical Removal Action (TCRA) and Munition Response Services

Subject: Biological/Ecological Site Visit

By: Cheryl Nash, AECOM

Date: 10 August 2015

On July 30, 2015, a site visit was conducted at four Munitions Response Sites (MRS) at the JOAAP for the purpose of evaluating the potential for threatened and endangered species habitat at the proposed restoration locations:

- JAAP-001-R-01, L3 MRS, the location of a planned Remedial Investigation (RI)
- JAAP-002-R-01, L2 MRS, the location of a planned RI
- JAAP-004-R-01, L34 MRS, the location of a planned RI
- JAAP-001-R-03, L3 Capped Area MRS, the location of a planned Time Critical Removal Action (TCRA)

The L3 Capped Area MRS lies within the boundary of the L3 MRS so these two MRSs are discussed jointly in this Tech Memo. L2, L3, and L34 were all traversed in their entirety and habitat noted. For plant species, the areas were also assessed for known associates.

Additionally, per the recommendation of Mr. Wade Spang (USDA Forest Service), the author of this memo contacted Mr. William Glass of Midewin National Tallgrass Prairie. Per Mr. Glass, there are no records of protected species within the four planned work areas. Additionally, Mr. Glass met with URS Group, Inc (URS) on August 11, 2015 to discuss concerns that Midewin National Tallgrass Prairie may have regarding protected species within the work areas. Mr. Glass reiterated that he has no concerns for any protected species within the proposed work areas, with the exception of the northern long-eared bat. Mr. Glass advised that Midewin has no records of the bat's presence, but no surveys have been conducted for them. URS advised that the project will not be removing any trees (3 inches or greater in diameter, at breast height) prior to October 15. Based on this protocol, Mr. Glass confirmed that Midewin has no concerns about potential impacts to any protected species.

Based on the site visit, species requirements, and discussions with Mr. William Glass, it has been determined that there is no suitable habitat for any of the potential species within the vicinity of the JOAAP at the proposed work areas. At L3, trees and shrubs will be removed to allow access to the area. At this location three trees were noted, one having the potential for roosting habitat for the northern long-eared bat; these three trees will not be removed until after October 15.

Below is a summary of the habitat noted and the potential for the presence of protected species at each of the four planned work areas. Attached is a summary of the potential for the presence of each of the protected species at each location. Additionally, a photographic log of the habitat present during the July 30, 2015 site visit is also attached.

L2:

The site visit revealed that L2 is an ecologically disturbed area dominated by *Cirsium altissimum* (tall thistle), *Dipsacus* species (teasel), *Lactuca biennis* (wild lettuce), *Trifolium* species (clover), *Solidago* species (goldenrod), *Coronilla varia* (crown vetch), *Daucus carota* (Queen Anne's lace), unknown

grasses (not in flower), and *Elaeagnus angustifolia* (Russian olive). The area has been historically disturbed and currently contains a road through the center of the area, with adjacent ditches. Aerial photographs from 2008 indicate grading was occurring at that time within this area. Prairie Creek is located within this work area, but at this location its banks are steep and it possesses a gravel and rock shoreline; therefore, no Blanding's turtle habitat is present at the creek in this work area. It was determined by the author of this memorandum that no native vegetative communities are intact at this location, and there is no habitat present for protected species.

L3:

L3 is an ecologically disturbed area dominated by the same species noted in L2. The area has been historically disturbed and currently contains a landfill with vegetative cap, an asphalt road, and abandoned structures. Aerial photographs from 2008 indicate that grading was occurring within this entire area at that time. Prairie Creek is located within this work area. Prairie Creek's banks are less steep at this location than in L2 but they are dominated by *Phalaris arundinacea* (reed canary grass) or have a gravel and rock shoreline; therefore, no Blanding's turtle habitat is present at the creek in this work area. There is suitable Blanding's turtle habitat upstream of a small spillway, but this habitat is upstream of the proposed work area. It was determined by the author of this memorandum that no native vegetative communities are intact at this location, and there is no habitat present for protected species.

Clearing will occur along the existing eastern fenceline within L3 for the purpose of providing access for equipment. Equipment storage and contractor vehicles will be stored within the area that currently contains abandoned structures. The majority of the proposed cleared area is composed of a scrub/shrub layer dominated by invasive woody species [Russian olive, *Populus deltoides* saplings (eastern cottonwood), and *Rhamnus* species (buckthorn)]. Three trees are located along this fenceline, including one that possesses peeling bark. This area will be cleared prior to October 15, but the three trees will not be removed. Therefore, impacts to northern long-eared bats that may possibly be present will be avoided.

L34:

The site visit revealed that L34 is an ecologically disturbed area dominated by the same non-woody species as noted in L2; there is no shrub/scrub vegetation located in this work area. Prairie Creek is located adjacent to this work area. Prairie Creek's banks are steep at this location, are dominated by reed canary grass, or possess a gravel and rock shoreline; there are no shallow wetlands or sandy soils associated with the creek at this location. It was determined that no Blanding's turtle habitat is present at the creek in this work area. There is suitable Blanding's turtle habitat upstream of the work area, associated with a small sandbar located within the creek, but this habitat is upstream of the proposed work area. It was determined by the author of this memorandum that no native vegetative communities are intact at this location, and there is no habitat present for protected species.

Attachments:

Table: Threatened and Endangered Species Possibly Occurring within the JOAAP Proposed Work Area
Photographic log of the habitat present during the July 30, 2015 site visit.

Table: Threatened and Endangered Species Potentially Occurring within the JOAAP Proposed Work Areas

Common Name	Latin Name	status	Habitat Requirement/Known Associates	Habitat Suitability/Presence
leafy prairie clover	<i>Dalea foliosa</i>	Federally Endangered	Dolomite prairies with thin soils over limestone substrate, flowers mid to late summer. Associates: asters, <i>Cirsium discolor</i> , <i>Fragaria virginiana</i> , <i>Rudbeckia hirta</i> , <i>Solidago</i> species	L2: no dolomite prairie present L3: no dolomite prairie present L34: no dolomite prairie present
northern long-eared bat	<i>Myotis septentrionalis</i>	Federally threatened	Roosts and forages in upland forests and woods. Roosts underneath bark, in cavities or crevices of live trees or snags.	L2: no trees to be cleared L3: woody vegetation dominated by shrubs, three trees located within scrub/shrub area will not be removed prior to October 15. L34: no trees to be cleared
slender sandwort	<i>Minuartia patula</i>	State threatened	Found in limestone outcrops, rocky barens, glades; flowers spring to early summer. Associates: <i>Asclepias verticillata</i> , <i>Eleocharis compressa</i> , <i>Geranium carolinianum</i> , <i>Scutellaria parvula</i> , <i>Verbena simplex</i>	L2: associates not found L3: : associates not found L34: : associates not found
glade quillwort	<i>Isoetes butleri</i>	State endangered	Found in limestone glades and dolomite prairie. Disappears by July – an ephemeral Associates: <i>Allium</i> species, Aster, <i>Eleocharis compressa</i> , <i>Helianthus rigidus</i> , <i>Verbena simplex</i>	L2: associates not found L3: : associates not found L34: : associates not found
eared false foxglove	<i>Tomanthera auriculata</i>	State threatened	Found in moist prairies, ½ - 1 ½; tall, unbranched snapdragon. Flowers late summer. Associates: <i>Andropogon gerardii</i> , <i>Asclepias sullivantii</i> , asters, <i>Elymus canadensis</i> , <i>Helianthus species</i> , <i>Phlox</i> species, <i>Silphium</i> species, <i>Solidago</i> species, <i>Zizia aurea</i> .	L2: except for <i>Solidago</i> species, associates not found L3: except for <i>Solidago</i> species, associates not found L34: except for <i>Solidago</i> species, associates not found
red-veined leafhopper	<i>Aflexia rubranura</i>	State threatened	Obligate to host plant, prairie dropseed (blooms August, September)	L2: host plant not found L3: host plant not found L34: host plant not found
rattlesnake root borer	<i>Papaipema eryngii</i>	State endangered	Obligate to host plant, rattlesnake master (blooms July through September)	L2: host plant not found L3: host plant not found L34: host plant not found

Table: Threatened and Endangered Species Potentially Occurring within the JOAAP Proposed Work Areas

Blanding's turtle	<i>Emydoidea blandingii</i>	State endangered	Wetland complexes with adjacent sand soils. Calm, shallow waters, including wetlands associated with rivers and streams	L2: no appropriate habitat present, Prairie Creek banks too steep at this location, gravel and rock shoreline L3: no appropriate habitat present, Prairie Creek banks dominated by <i>Phalaris arundinacea</i> or composed of gravel and rock. L34: no appropriate habitat present, no shallow wetlands or sandy soils associated with Prairie Creek. Steep banks dominated by <i>Phalaris arundinacea</i> .
least bittern	<i>Ixobrychus exilis</i>	State threatened	Fresh marshes, reedy ponds, in areas with tall, dense vegetation standing in water. Climbs reeds rather than wading.	L2: no habitat present L3: no habitat present L34: no habitat present
American bittern	<i>Botaurus lentiginosus</i>	State endangered	Stocky, well-camouflaged heron of dense reed beds. Can be found with least bitterns, but also in less densely vegetated and shallower wetlands.	L2: no habitat present L3: no habitat present L34: no habitat present
king rail	<i>Rallus elegans</i>	State endangered	Chicken-like marsh bird, long, slightly down-curved bill. Marshes with dense cover, including cattails, bulrushes, or willows.	L2: no habitat present L3: no habitat present L34: no habitat present
upland sandpiper	<i>Bartramia longicauda</i>	State endangered	Found in grasslands, not marshes. Inhabits native prairie and other grassy areas.	L2: no habitat present L3: no habitat present L34: no habitat present
short-eared owl	<i>Asio flammeus</i>	State endangered	Open grasslands	L2: no habitat present L3: no habitat present L34: no habitat present
northern harrier	<i>Circus cyaneus</i>	State endangered	Marshes and grasslands	Degraded habitat is present within Areas L2, L3, and L34. The work will begin in Fall 2015, after any young potentially present have fledged. The activities will continue through winter into spring; any birds present will avoid these areas due to the noise/activity that will be ongoing. Therefore, no impacts to this species are anticipated.

Table: Threatened and Endangered Species Potentially Occurring within the JOAAP Proposed Work Areas

loggerhead shrike	<i>Lanius ludovicianus</i>	State endangered	Grasslands and other open habitats, with utility poles, fence posts, or other conspicuous perches. Thorns or barbed wire important. A loggerhead shrike was noted on the fence line associated with the new bison pen, but not within the proposed work areas.	L2: no habitat present L3: no habitat present L34: no habitat present
common moorhen	<i>Gallinula chloropus</i>	State endangered	Well-vegetated marshes, ponds, canals, or wetlands	L2: no habitat present L3: no habitat present L34: no habitat present



PHOTOGRAPHIC LOG


Project: Joliet AAP, Joliet, IL		Site Location: Planned Geophysical Area L2	Project No. 60419079
Photo No. 1	Date: 7/30/15		
Direction Photo Taken: north			
Description: Planned Geophysical Area L2 Russian olive shrubs dominate portions of the area.			

Photo No. 2	Date: 7/30/15	
Direction Photo Taken: south		
Description: Planned Geophysical Area L2 Dominated by invasive species, including teasel.		



Project: Joliet AAP, Joliet, IL		Site Location: Planned Geophysical Area L3	Project No. 60419079
Photo No. 3	Date: 7/30/15		
Direction Photo Taken:			
northwest			
Description:			
Planned Geophysical Area L3			
Dominated by invasive species, including Queen Anne's lace.			

Photo No. 4	Date: 7/30/15	
Direction Photo Taken: southwest		
Description: Planned Geophysical Area L3 Prairie Creek, no Blanding's turtle habitat; shoreline dominated by <i>Phalaris arundinacea</i> or composed of gravel.		


Project: Joliet AAP, Joliet, IL		Site Location: Planned Geophysical Area L3	Project No. 60419079
Photo No. 5	Date: 7/30/15		
Direction Photo Taken: north			
Description: Planned Geophysical Area L3 Prairie Creek, potential Blanding's turtle habitat upstream of spillway, upstream of proposed work area.			

Photo No. 6	Date: 7/30/15	
Direction Photo Taken: north		
Description: Planned Geophysical Area L34 Dominated by invasive species, including Queen Anne's lace and Solidago species.		


Project: Joliet AAP, Joliet, IL		Site Location: Planned Geophysical Area L34	Project No. 60419079
Photo No. 7	Date: 7/30/15		
Direction Photo Taken: northeast			
Description: Planned Geophysical Area L34 Dominated by invasive species, including Queen Anne's lace and <i>Solidago</i> species.			

Photo No. 8	Date: 7/30/15	
Direction Photo Taken: east		
Description: Prairie Creek, no Blanding's turtle habitat; shoreline dominated by <i>Phalaris arundinacea</i> or possesses banks too steep.		



PHOTOGRAPHIC LOG

Project: Joliet AAP, Joliet, IL

Site Location: Planned Geophysical Area L34

Project No.
60419079

Photo No.
9

Date:
7/30/15

**Direction Photo
Taken:**

northwest

Description:

Prairie Creek, no
Blanding's turtle
habitat; possesses
gravel shoreline



Technical Project Planning Meeting Minutes

MEETING NOTES

Joliet AAP, Illinois

Meeting Date: April 16, 2015

Time: 0900 - 1630

Location: Joliet AAP Farmhouse

Contract: W912DY-09-D-0061, Delivery Order CY02

Project: Joliet Army Ammunition Plant (JOAAP) Time Critical Removal Action (TCRA) and Munition Response Services

Meeting Subject: Technical Project Planning (TPP 1)

Meeting Objective: Review and gain stakeholder concurrence of data quality objectives and technical approaches in advance of work plan documents

Attendees: Art Holz, Joliet AAP
Tom Barounis, USEPA Region 5
Michael Higgit, IEPA
Wade Spang, USDA-FS Midewin
Bob Hommes, USDA-FS Midewin
Jeff Martina, USDA-FS Midewin
Glen Beckham, USACE Louisville District
Don Peterson, USACE Louisville District
Nick Stolte, USACE Huntsville District
Travis McCoun, USACE Baltimore District
Paul Greene, USACE Baltimore District
Craig Johnson, URS
Andreas Kothleitner, URS
John Heinicke, URS

Telephone Attendees: Robin Paul, AEC
Debbie McKinley, USACE Baltimore District
Thomas Colozza, USACE Baltimore District
Darrell Hall, URS

Notes by: John Heinicke, URS, 21 April 2015

Following is the meeting agenda:

- 0900-0930: Introductions/Roles
- 0930-1200: Remedial Investigations (RI) at L2, L3, and L34
- 1330-1400: L3 Capped Area TCRA
- 1400-1430: Wrap-up

During the meeting, the attached TPP slides (55 slides in total) were reviewed and discussed on a slide by slide basis. Following are the most significant discussion items and action items.

Slides 11 and 13. Travis provided an overview of the Installation Restoration Program (IRP) sites versus Military Munitions Response Program (MMRP) sites and how the JOAAP facility has progressed to the current situation where IRP sites are closed and some areas are being re-opened as MMRP sites. The sites that are the subject of this project are those shown on Slide 13. Art noted that the Army was undergoing some administrative work to formalize the “new” sites. At this time, URS is calling the sites the L2 site, the L3 site, the L34 site, and the L3 Capped Area.

Slide 13. Robin indicated that the RI Work Plan could combine all three sites, but the RI Reports must be separated by site. This fits URS' plan for submittals.

Slides 17 and 18. For the RI Conceptual Site Models (CSM), the RI Work Plan should explain why residential exposure is not an exposure pathway. Art noted that text from the 2004 ROD would be useful in determining how the residential pathway was eliminated during the IRP work.

Slide 19. Wade indicated that future public use might include farming (soy, wheat), cattle, and bison, and could include tilling to a depth of 1 foot. After considerable discussion, this activity will need to be considered during the development of Remedial Action Objectives (RAOs), which is done during the Feasibility Study (FS), after the RI. Further, URS will make sure that sufficient information is collected during the RI to help establish the RAOs. Art noted that he was going to review previous documents for future land use text.

Slide 19. Debbie noted that the RI Work Plan should state that the RI objectives are to complete the RI, complete a risk assessment, and to have sufficient data to complete an FS.

Slide 20. Debbie indicated the RI Work Plan should include the rationale for using discrete sampling.

Slide 21. The group discussed the use of UXO Estimator to "provide a 95% confidence level and a MEC density for minor public use (i.e., ≤ 1.0 MEC item/acre)." At the conclusion, this criteria was accepted for use in the RI Work Plan.

Slide 22. The Digital Geophysical Mapping (DGM) transects shown are regular across the site and not random. Randomness is an assumption for the use of the UXO Estimator statistics. The current plan has more DGM coverage than necessary to meet the criteria and a random subset of the transects along with randomly located grids will be used for UXO Estimator statistics; therefore, the approach is acceptable.

Slide 27. Drums containing a white powdery ash were identified during Verification Study at L3. Similar material was characterized as a non-hazardous material during the previous remedial action and disposed of at the Prairie View Recycling and Disposal Facility. URS will review the L3 Capped Area Closure Report for the analyses that were completed during the previous characterization, and the RI Work Plan will include the same or similar sampling and analysis.

Slide 28. Debbie noted the RI Work Plan should indicate why the proposed compounds for this investigation were selected for analysis.

Slide 29. The L3 RI Report should include a brief discussion of the TCRA and the TCRA results. The RI Report should include a figure of the Digital Geophysics Mapping transects or grids with a note explain why there are no transects or grids within the L3 Capped Area removal.

Slides 33 and 34. Debbie noted that the MC CSM for L34 is not the same as L2. The L34 MC CSM will be revised to indicate that MC only includes explosives compounds because metals were eliminated as a Chemical of Concern during the IRP and because components disposed at L34 were ceramic or glass. The RI Work Plan should indicate that MC contamination was previously addressed during the IRP investigation.

Slide 40. The TCRA activities will result in a ROD modification. Options for the modification include a memorandum to file, Explanation of Significant Differences (ESD), or ROD Amendment. JOAAP has previously modified the decision at another site using an ESD. Art indicated that an ESD would be the preferred type of modification for this project, pending legal and regulatory acceptance. EPA believes an ESD may work but Tom intends to have his management review and weigh in. The process (either an

ESD or ROD Amendment) does not need to be decided yet as it can not be done until after the TCRA field work.

Slide 41. USACE indicated that the Layer 1 probability to encounter MEC/MPPEH should be changed from “negligible” to “low”. URS plans to have a UXO escort on site during Layer 1 intrusive work to implement MEC avoidance. It was agreed that Layer 1 could be used anywhere on site and does not have to be processed through the sift plant and undergo MPPEH inspection. Debbie also noted that URS should explain why there is no MC at the bedrock. Upon further discussion, it was noted that MC may be all the way down to the bedrock surface, and if that is the case, the excavation will continue to the bedrock surface as long as the groundwater table is not present.

Slide 48. Site restoration at L3 Capped Area following the TCRA needs to be coordinated with the USDA-FS. URS noted that the project scope includes removal of approximately 30,000 cy (Layer 3) and backfilling with approximately 20,000 cy (from Layer 1). This will leave a slight deficit of material from the topographic contours that existed before the landfill cap was installed in 2007. Don suggested that URS submit a Restoration Plan that can be reviewed by USDA-FS so they can have input to the final site restoration plan. Travis believes that Baltimore has the topographic files from 2006 (before the capped area remedial action) and will send them to URS. Travis requested that URS send him a reminder of this. URS will use the 2006 topographic map to create a conceptual final grading plan.

Slide 50. The haul route shown will not be feasible because the USDA-FS is developing property west of the site into a Bison range. This development will entail placing fences across Central Road and South 208th Avenue. URS will need to get the fence location plan from USDA-FS and then determine a new route. Several new routes were suggested during the meeting.

Slides 52 – 54. URS handed out a hand-drawn, single page schedule that is easier to follow than the slides. During review of the schedule, Paul noted that the Explosive Safety Submittal is expected to be finalized on or before August so that should not impact the TCRA field schedule. Paul also noted that DDESB approval has slowed down, but we should be able to begin the TCRA field work and RI field work as planned. URS will get a copy of the current RI Explosive Site Plan from Baltimore District and mark-it up for the new RIs.

Other. Glen requested that URS update the hand-drawn timeline monthly (or similar depiction) and include notes about critical path items that need to be addressed to stay on schedule. URS agreed to include this information as part of the Monthly Progress Report. Also, the Monthly Progress Reports should include the number of MEC items identified, how they were disposed of, and the number of MPPEH items that were inspected.

Other. Art requested a short summary of URS’ plans to handle environmental protection. The JOAAP area has 14 Threatened and Endangered (T&E) species. URS plans to have a biologist walk the sites to identify whether or not any of the T&E species and/or associated habitat are present. If found to be present, mitigation will need to be planned. URS’ biologist will also train field staff to identify and avoid potential T&E. Art noted that the L3 Capped Area Remedial Design and Closure Report may be useful to determine what was done at that time. Wade suggested that we contact the US and State Fish and Wildlife Services to determine additional requirements for take and mitigation. It was also mentioned that the project could have exceptions. For example, the USDA-FS can help with mitigation as they have done this several times. URS will further discuss contacting FWS with Art and Glen prior to making this contact.

Other. URS wants to abandon the two wells at the L3 Capped Area before excavation and then replace them following excavation. This activity would eliminate these wells from the LTM sampling program

for 6 months to 1 year. Art will contact the current Long Term Monitoring (LTM) contractor and determine the current status of the wells.

Other. Art will provide Cook County bomb squad contact information to URS.

Other. The Draft Verification Study Report being done by Baltimore District is about ready. Travis will send a copy of this report to URS.

Other. The MPPEH inspection and MDAS terminology use will be revised as discussed with Paul. Paul will provide the contact information for the contractor that picked up the MDAS during the Verification Study done by the Baltimore District.

9 a.m. – 4:30 p.m.

[illegible]

Time Critical Removal Action and Munitions Response Services Joliet Army Ammunition Plant (JOAAP), Illinois

Technical Project Planning Meeting 1

16 April 2015



**US Army Corps of Engineers
BUILDING STRONG®**



Agenda

- Introductions and Terminology
- Background
- RI at L2 (Explosive Burning Ground 1)
- RI at L3 (Demolition Area)
- RI at L34 (Former Burning Ground)
- TCRA at L3 Capped Area
- Deliverables and Schedule



Introductions

- JOAAP
 - ▶ Art Holz
- U.S. Army Environmental Command
 - ▶ Robin Paul
- U.S. Army Corps of Engineers
 - ▶ Glen Beckham, PM
 - ▶ Don Peterson, COR
 - ▶ Travis McCoun, Technical Lead
 - ▶ Paul Greene, Safety
 - ▶ Tom Colozza, Geophysicist
 - ▶ Debbie McKinley, Environmental Engineer
 - ▶ Nick Stolte, ITR
- U.S. Environmental Protection Agency, Region 5
 - ▶ Thomas Barounis
- Illinois Environmental Protection Agency
 - ▶ Michael Haggitt
- URS
 - ▶ John Heinicke, PM
 - ▶ Craig Johnson, RI Lead
 - ▶ Andreas Kothleitner, Quality
 - ▶ Mac Reed, Safety
 - ▶ Darrell Hall, Geophysics
 - ▶ Scott McClelland, Review



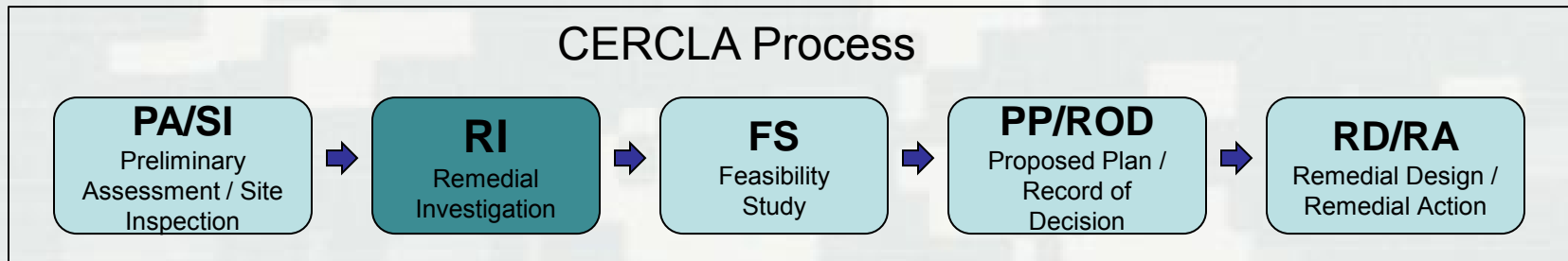
Technical Project Planning (TPP)

- TPP Meeting 1 covers pre-work plan activities for each of the three RIs and the TCRA:
 - ▶ Review previous investigations and actions.
 - ▶ Prepare current conceptual site models (CSMs).
 - ▶ Develop data quality objectives (DQOs) using seven step process.
 - ▶ Establish field activities.
- TPP Meeting 2 will finalize the RI Work Plan (all three RIs will be combined into a single Work Plan) and the TCRA Work Plan.
- TPP Meeting 3 will discuss the Draft Final RI Reports (L34 and L2).
- TPP Meeting 4 will discuss the Draft Final L3 Capped Area TCRA Report and L34 PP/ROD.



CERCLA Terminology

- CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
 - ▶ Federal law enacted in 1980 (amended in 1986 by the Superfund Amendments and Reauthorization Act) that addresses funding for and remediation of abandoned and uncontrolled hazardous waste sites. Establishes criteria for the PA/SI, RI, FS, PP/ROD, and RD/RA.



CERCLA Terminology

- **RI – Remedial Investigation**
 - ▶ An exploratory inspection conducted at a site to define the nature and extent of contamination and assess hazards/risks.
- **FS – Feasibility Study**
 - ▶ An evaluation of possible remedies using information generated during an RI, typically becomes the basis for selection of a remedy that eliminates the threat posed by site contaminants.
- **PP – Proposed Plan**
 - ▶ A plan that identifies the preferred remedial alternative for a site, and made available to the public for review and comment.
- **ROD – Record of Decision**
 - ▶ Decision document that records the selected remedy and reasoning used to arrive at the selected remedy, demonstrating that all CERCLA requirements were adhered to.
- **TCRA – Time Critical Removal Action**
 - ▶ Remedial action that must be completed on fast track basis because of potential imminent threat.



MMRP Terminology

- *Military Response Terminology Memorandum*, Department of Army, Office of the Assistant Secretary Installations and Environment (April 21, 2009)
- **MMRP – Military Munitions Response Program**
 - ▶ Directs environmental cleanup at locations where MEC and MC are known or suspected
- **MEC – Munitions and Explosives of Concern**
 - ▶ Distinguishes specific categories of military munitions that may pose unique explosive safety risks:
 - UXO – Unexploded Ordnance. Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded whether by malfunction, design, or an other cause. [10 U.S.C. 101e(5)]
 - DMM – Discarded Military Munitions. Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. [10 U.S.C. 2710(e)(2)]
 - MC – Munitions Constituents (e.g., TNT, RDX), as defined by 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose explosive hazard.
- **MC – Munitions Constituents**
 - ▶ Any material originating from UXO, DMM, or other military munitions, including explosive and non-explosive material, and emissions, degradation, or breakdown elements of ordnance or munitions. [10 U.S.C. 2710(e)(3)]



MMRP Terminology

- **MPPEH – Material Potentially Presenting an Explosive Hazard**
 - ▶ Material potentially containing explosives or munitions (e.g., munitions containers and packaging; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris), or material potentially containing a high enough concentration of explosives such that the material presents explosive hazard.
- **MDAS – Material Documented as Safe**
 - ▶ MPPEH that has been assessed and documented by appropriate UXO-qualified personnel as not presenting an explosive hazard.
- **MD – Munitions Debris**
 - ▶ Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins,) remaining after munitions use, demilitarization, or disposal.
- **MDEH – Material Documented as an Explosive Hazard**
 - ▶ MPPEH that cannot be documented as MDAS, that has been assessed and documented as to the maximum explosive hazards the material is known or suspected to present, and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH.



Background

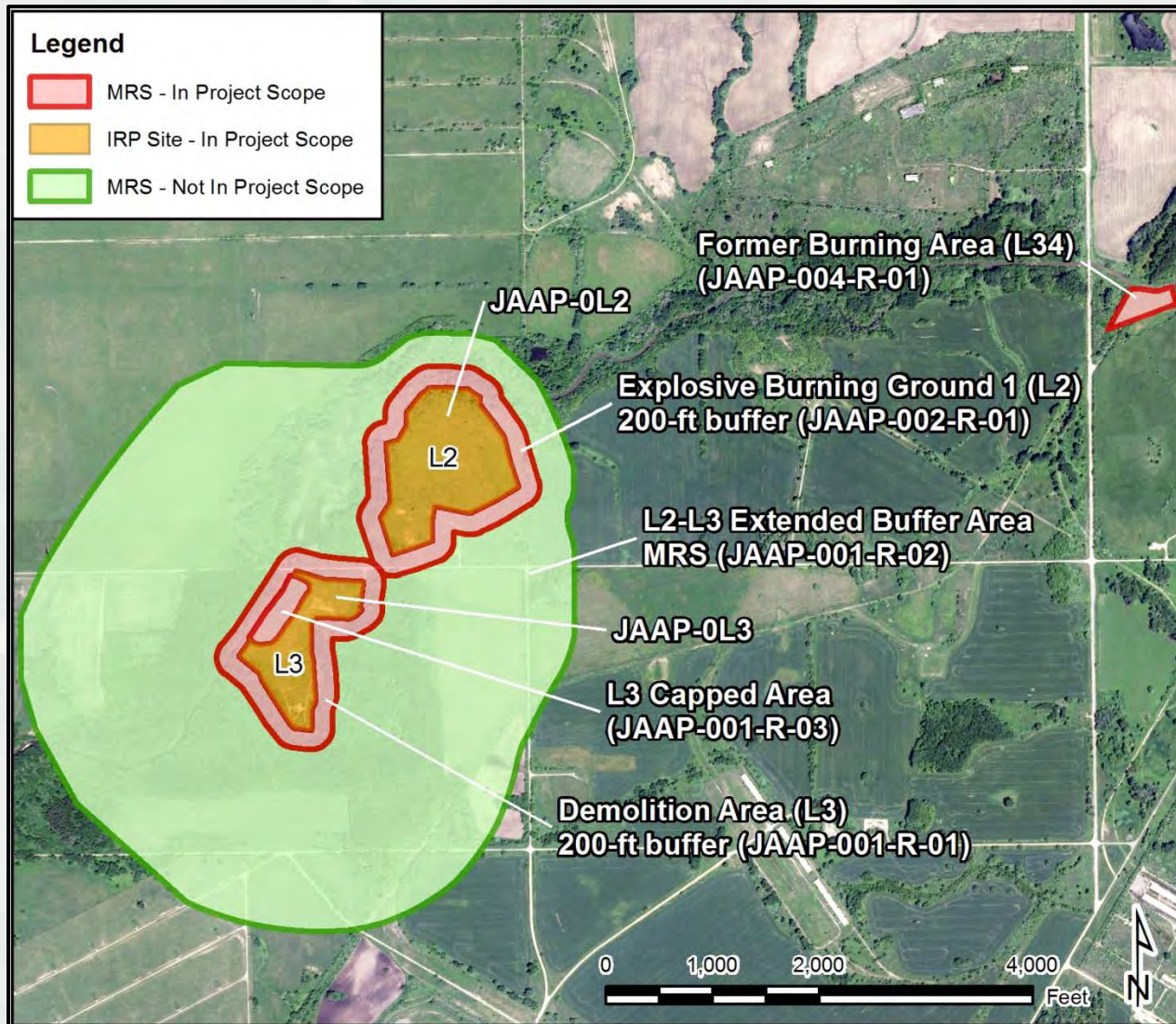


JOAAP Overview

- Former Army munitions production facility in Will County, IL.
- Constructed during WWII and operated until 1977.
- Two main functional areas that were added to NPL in 1987 and 1989:
 - ▶ Manufacturing (MFG) Area
 - ▶ Load-Assembly-Package (LAP) Area
- Public Law 104-106 (FY 1996) legislated terms for conveyance of property to various entities (USDA, VA, Will County, State of IL).
- The properties for sites in this project are currently undeveloped and owned by the Army. These properties will be transferred to USDA for use as native prairie habitat.



IRP & MMRP Sites in Project Vicinity

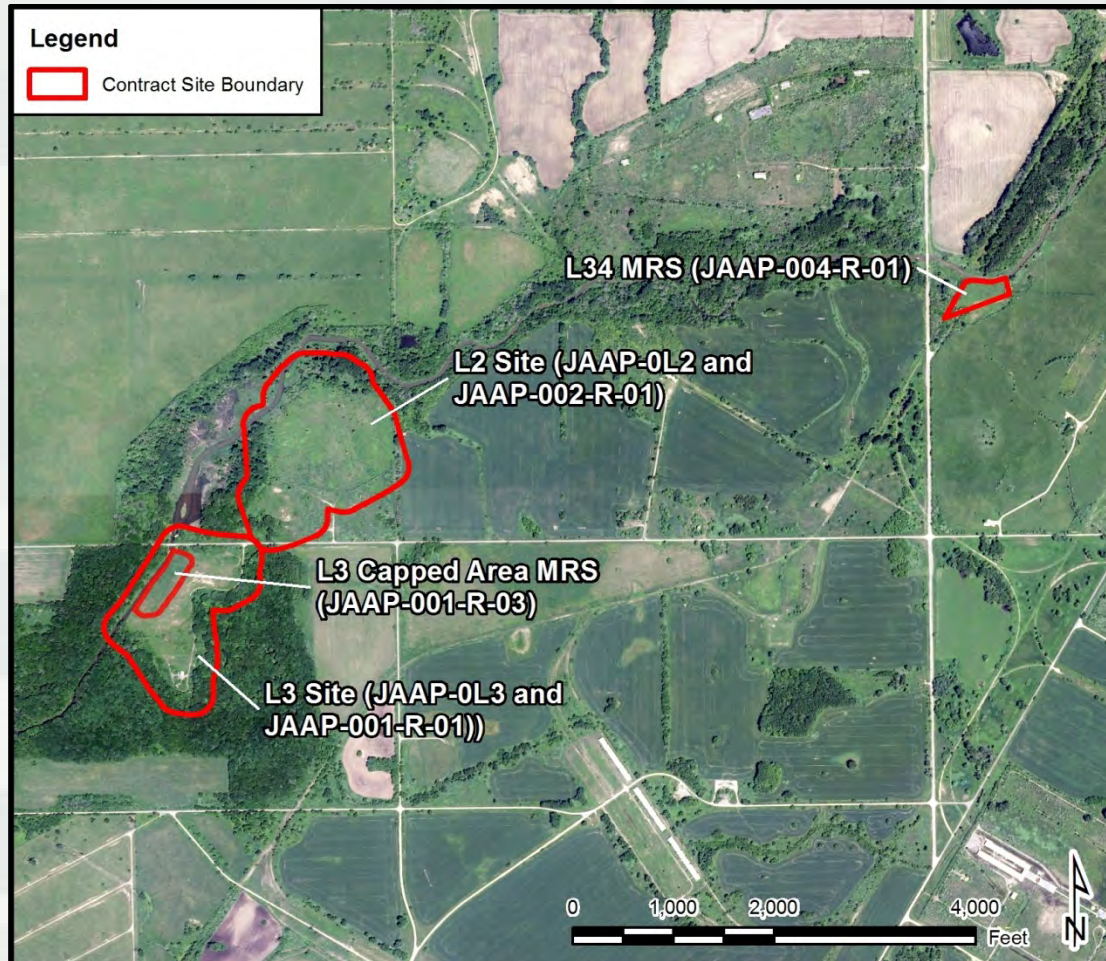


Previous Work at Project Sites

IRP	MMRP
<ul style="list-style-type: none"> ▪ Following RI/FS, two RODs (1998 and 2004) have been signed. ▪ The RODs identified the chemicals of concern (COCs) and established upper and lower cleanup values. ▪ Selected remedies at L2 and L3 have been implemented and these sites have approved Closure Reports. ▪ Currently, L2 and L3 have LUCs and a long-term groundwater monitoring program. ▪ No further action for soil and groundwater operable units was selected for L34 in 1998 ROD. 	<ul style="list-style-type: none"> ▪ Based on an EE/CA, range inventory, records review, and SI, several new MRSs were established: <ul style="list-style-type: none"> ▶ JAAP-002-R-01 (200-ft buffer around L2) ▶ JAAP-001-R-01 (200-ft buffer around L3) ▶ JAAP-004-R-01 (L34) ▶ JAAP-001-R-02 (Extended Buffer) ▪ MRSs underwent MEC removal to 1 ft depth except for the Extended Buffer, which is undergoing an RI under a different project. ▪ Verification study is underway at L2 and L3 to confirm previous MEC removal.



Scope of This Project



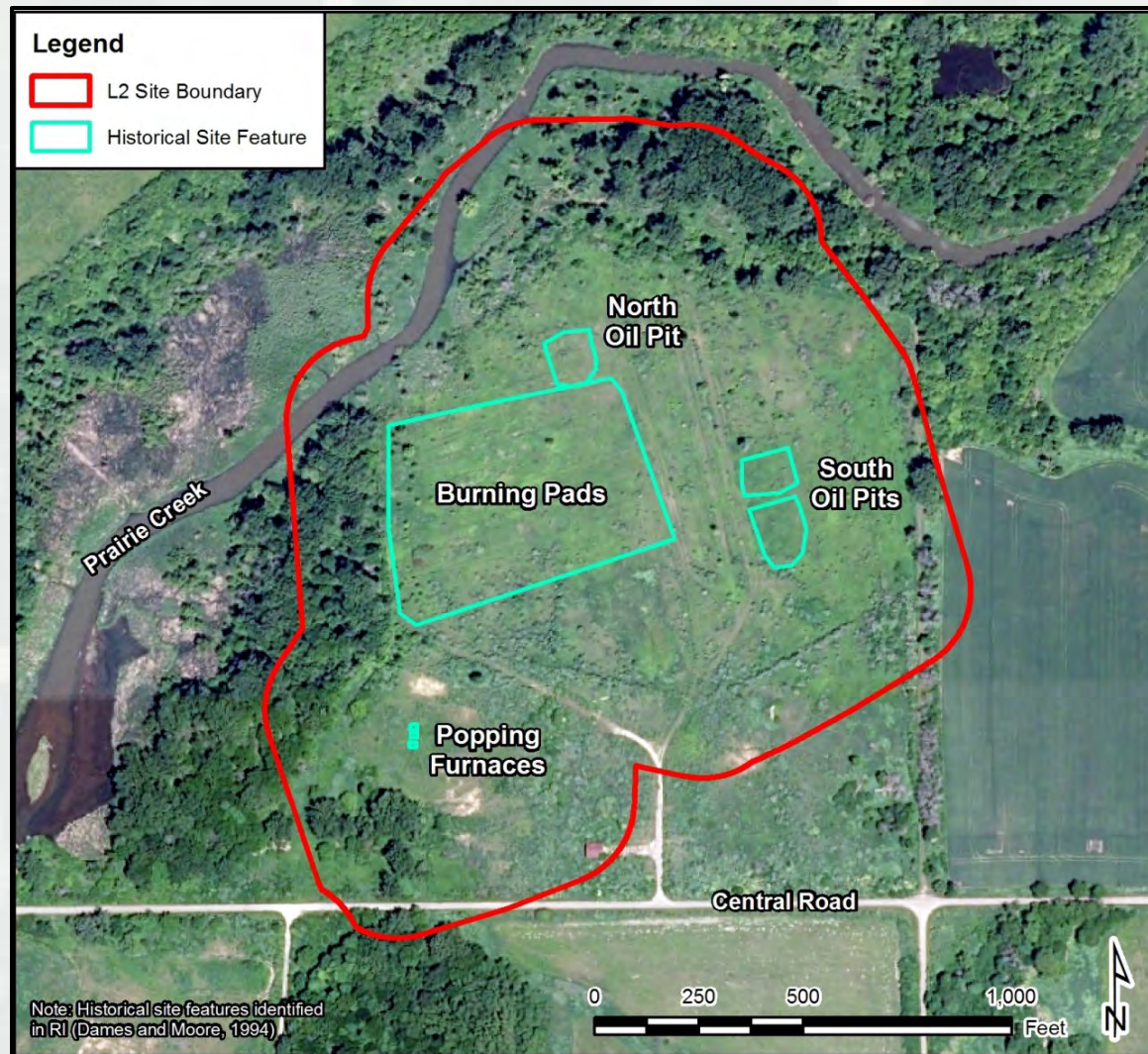
- **RI at L2 Site, Explosive Burning Ground.** Site includes IRP Site JAAP-0L2 and MRS JAAP-002-R-01(L2 200-ft buffer).
- **RI At L3 Site, Demolition Area.** Site includes IRP Site JAAP-0L3 and MRS JAAP-001-R-01 (L3 200-ft buffer).
- **RI/FS and PP/ROD at L34 Former Burning Area.** MRS JAAP-004-R-01.
- **TCRA and ROD Modification at L3 Capped Area.** MRS JAAP-001-R-03.



Remedial Investigation at L2 (Explosive Burning Ground)



L2 Site Map (52 acres)

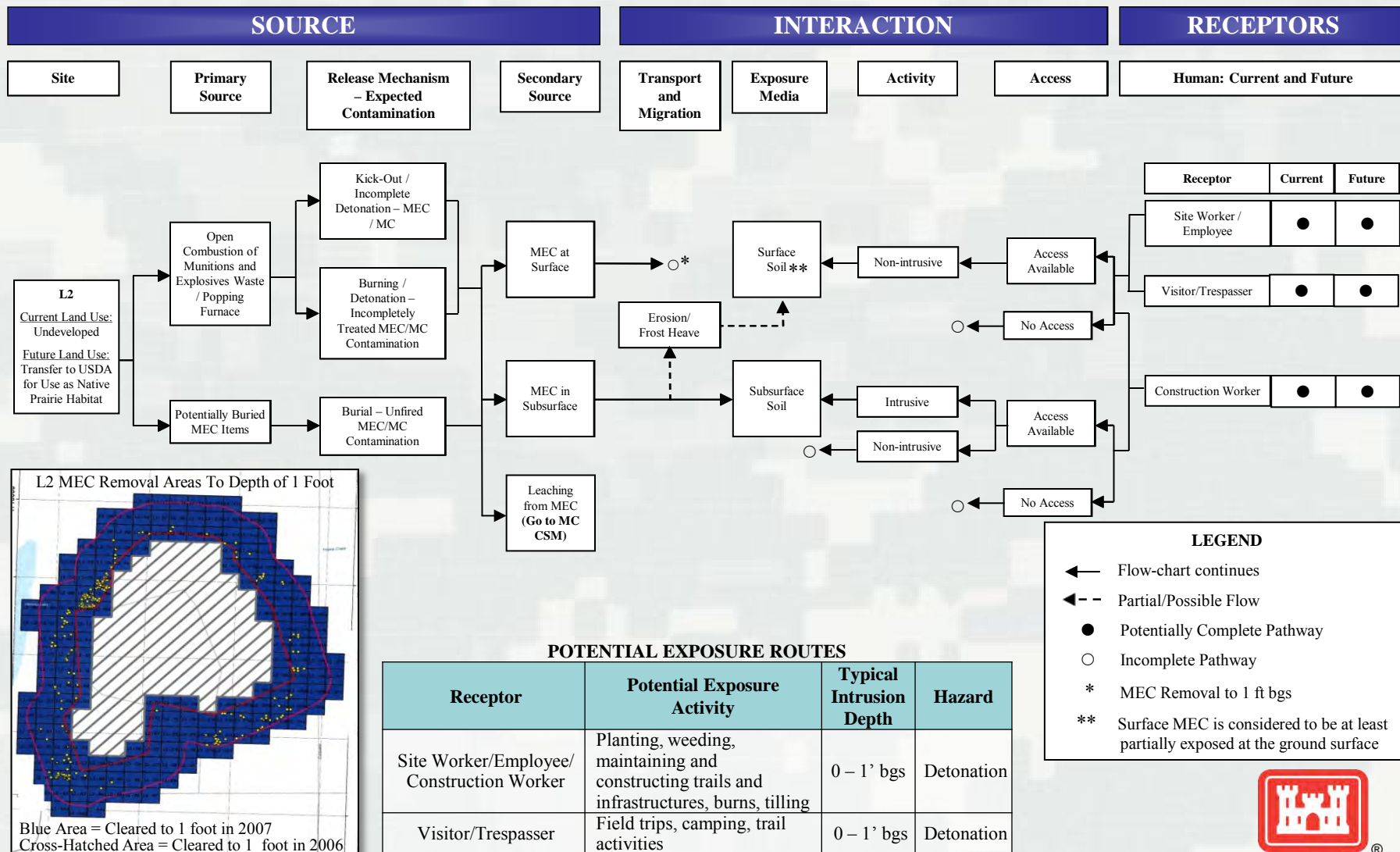


Previous IRP/MMRP Work at L2

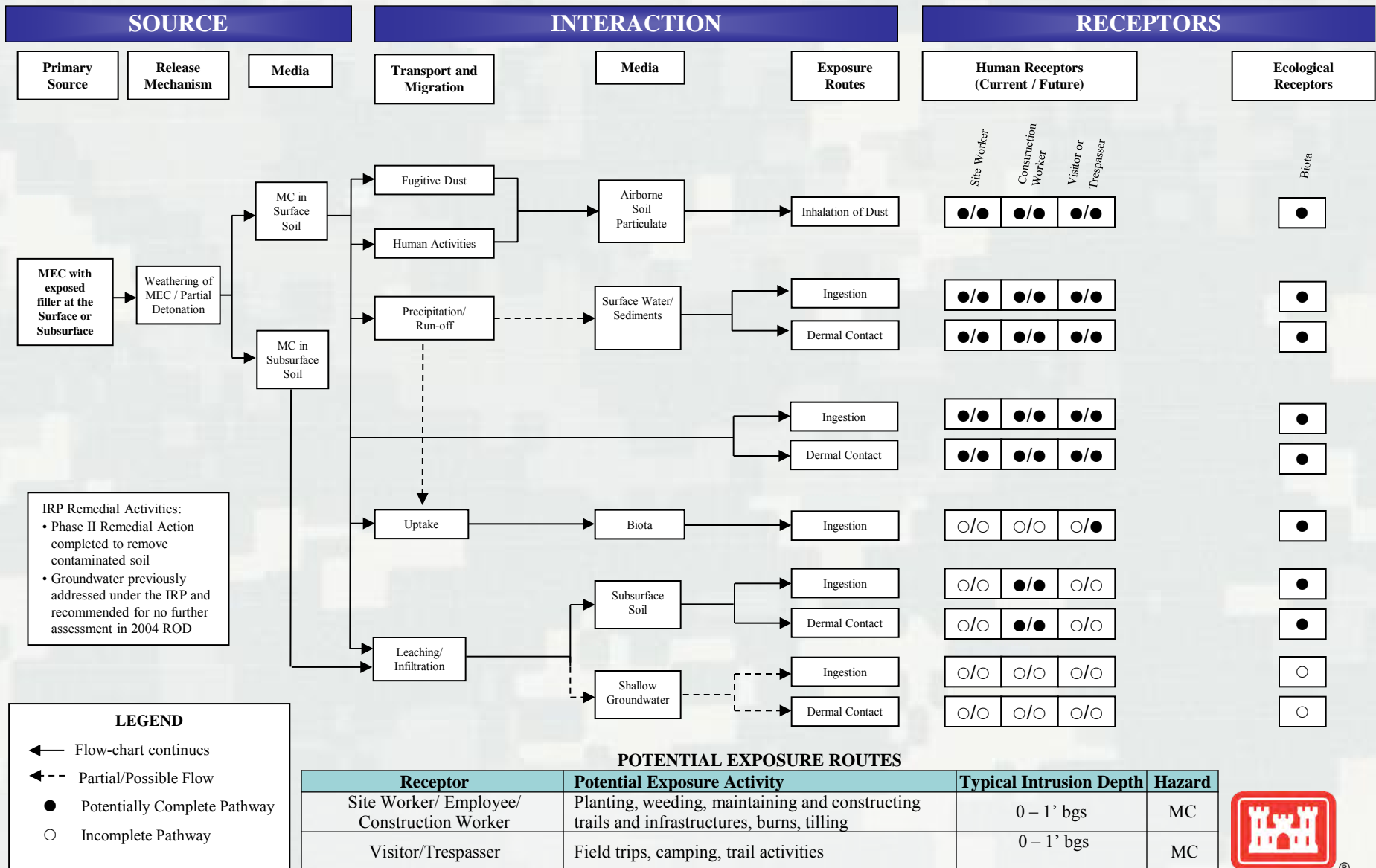
IRP		
Report Title	Author	Date
Phase I RI Report, LAP Area	Dames and Moore	1993
Phase II RI Report, LAP Area	Dames and Moore	1994
ROD, Soil and GW Operable Units on MFG and LAP NPL Sites	AEC	1998
ROD, Soil Operable Unit Interim Sites	AEC	2004
Phase II RA/Closure Report	MWH	2009
MMRP		
EE/CA, Sites L2, L3, L11, L16, L21, and L34	USAESCH	1999
Final CTT Range Inventory	e ² M	2002
HRR for Other Than Operational Ranges at JOAAP	USACE-St. Louis	2005
Final SI Report	e ² M	2005
Final AAR of Sites L2 and L3	USA Environmental, Inc.	2007
Final SSFR MMRP Site L2	MKM	2010
Verification Study of Site L2	USACE-Baltimore	On-going



L2 - MEC Conceptual Site Model



L2 - MC Conceptual Site Model



RI Data Quality Objectives

L2 Site – 52 acres

1. State the problem

- ▶ MEC and associated MC contamination are potential risks to current and future site workers, construction workers, visitors/trespassers, and ecological receptors.

2. Identify the Goal of the Study

- ▶ Determine if further munitions response action is needed or if an NFA recommendation for L2 is appropriate.

3. Identify Information Inputs

- ▶ Historical use of site and most reasonably anticipated future land use.
- ▶ Previous aerial photo analysis, investigations, and removal/remedial actions.
- ▶ New geophysical survey, intrusive investigation, and MC samples – part of this RI.

4. Define the Boundaries of the Study

- ▶ IRP L2 Site and 200-ft buffer MRS (JAAP-002-R-01) - 52 acres to depth of instrument detection.
- ▶ Target analytes will be the COCs established in the 2004 ROD.



RI Data Quality Objectives

L2 Site – 52 acres

5. Develop the Analytic Approach

- ▶ If an anomaly detected during DGM survey (EM61) meets anomaly selection criteria (i.e., above background threshold determined by IVS and based on professional judgment), then intrusively investigate the anomaly.
- ▶ If site conditions prevent collection of DGM data, then analog survey will be completed and all detected anomalies will be intrusively investigated.
- ▶ If DGM transect results identify high density areas, then 100% coverage grids will be completed. The definition of low and high density areas (e.g., ≥ 50 items/acre above background) will be determined by the project team using VSP statistical tools with data from the transect survey.
- ▶ If MEC items with exposed filler or high anomaly density areas are discovered, then collect discrete MC soil samples.
- ▶ If MC soil result exceeds a lower cleanup value (2004 ROD), then collect additional MC soil sample(s) to delineate contamination.
- ▶ If MC surface soil (upper 6 inches) result exceeds a lower cleanup value (2004 ROD), then collect surface soil sample(s) in down gradient direction to evaluate potential migration to Prairie Creek.



RI Data Quality Objectives

L2 Site – 52 acres

6. Specify Performance or Acceptance Criteria

- ▶ UXO Estimator inputs to provide 95% confidence level and a MEC density for minor public use (i.e., ≤ 1.0 MEC item/acre).
- ▶ DGM data meet geophysical system verification (GSV) requirements presented in the UFP-QAPP.
- ▶ MC sample results meet the PARCCS parameters criteria listed in the UFP-QAPP for data to be used for decision making purposes.

7. Develop the Detailed Plan for Obtaining Data

- ▶ Complete surface clearance and vegetation removal, and install instrument verification strip.
- ▶ Design geophysical data collection using UXO Estimator and VSP to determine placement/number of transects, grids, and intrusive investigations.
 - Collect an estimated 41,000 linear ft of transect data. Transect width will be 3 ft and transects will be spaced 60 ft apart.
 - Investigate grids (e.g., 50 ft x 50 ft) as necessary to satisfy acreage requirements of UXO Estimator and define MEC impacts in high density areas.
 - Intrusively investigate anomalies on transects and grids. The numbers of anomalies investigated will vary according to the anomaly density detected in the area.

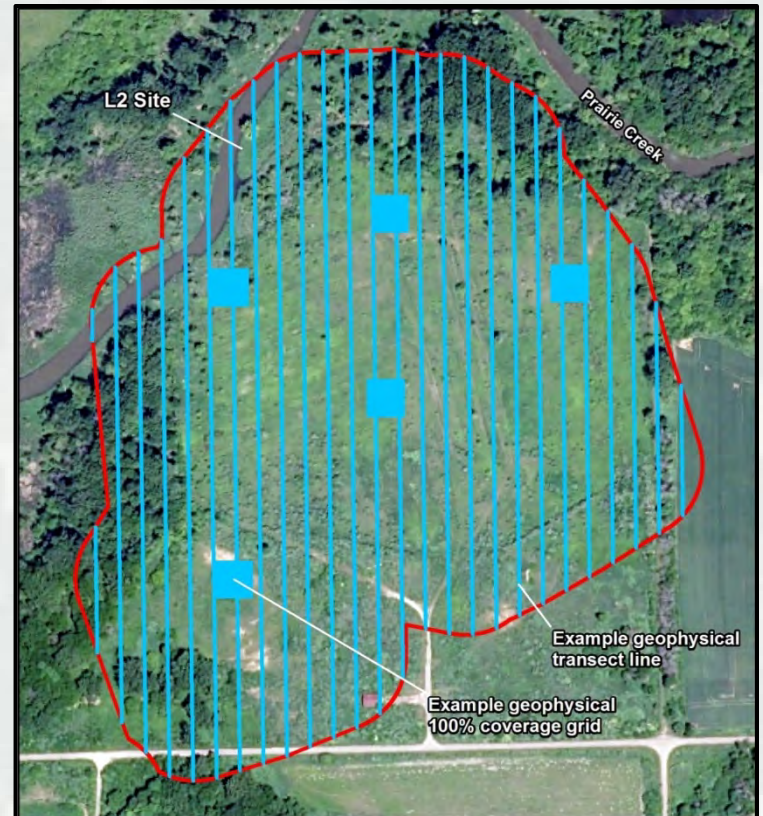


RI Data Quality Objectives

L2 Site – 52 acres

7. Develop the Detailed Plan for Obtaining Data (Continued)

- ▶ Collect MC soil samples at locations where MEC items with exposed filler are found (i.e., release source) or high anomaly density areas.
- ▶ Determine the number and location of MC samples based on the results of intrusive investigations.



Geophysical Survey Approach



- DGM system comprised of EM61-MK2 paired with real-time kinematic (RTK) GPS, either cart or litter mounted.
- Analog transects using handheld detectors (e.g., Schonstedt) and differential GPS in steep terrain and/or heavy vegetation.
- UXO Estimator and VSP will be used for designing geophysical data collection plans and analysis, and intrusive investigations.
- Geophysical activities will achieve applicable quality objectives as stated in the Geophysical Investigation Plan of the UFP-QAPP.

A screenshot of the UXO Estimator software interface. The window has a menu bar with 'File' and 'Help'. Below the menu bar are three tabs: 'Develop a Sampling Plan', 'Analyze Field Data', and 'Unit Conversions'. The 'Develop a Sampling Plan' tab is active. It contains an 'Inputs' section with three text boxes: 'Total number of acres in Area Of Interest (AOI):' with the value '52', 'Specify the UXO Target Density per acre in the AOI:' with the value '1', and 'Specify the desired confidence level (e.g., 0.95):' with the value '0.95'. Below these is a 'Perform Calculation' button. The 'Result' section shows 'Minimum number of acres to be investigated:' with the value '2.858'. There are two sub-sections: 'Transects' and 'Grids'. The 'Transects' section has a 'Select unit of measure:' dropdown set to 'Feet', a 'Specify width:' text box with the value '3', and 'The length is:' text box with the value '41,493.6'. The 'Grids' section has a 'Select unit of measure:' dropdown set to 'Feet', 'Specify Dimensions:' text boxes with the values '100' and '100', and a 'Number of grids:' text box with the value '12.46'. Both sub-sections have a 'Perform Unit Conversion' button.

Remedial Investigation at L3 (Demolition Area)



L3 Site Map (43 acres)

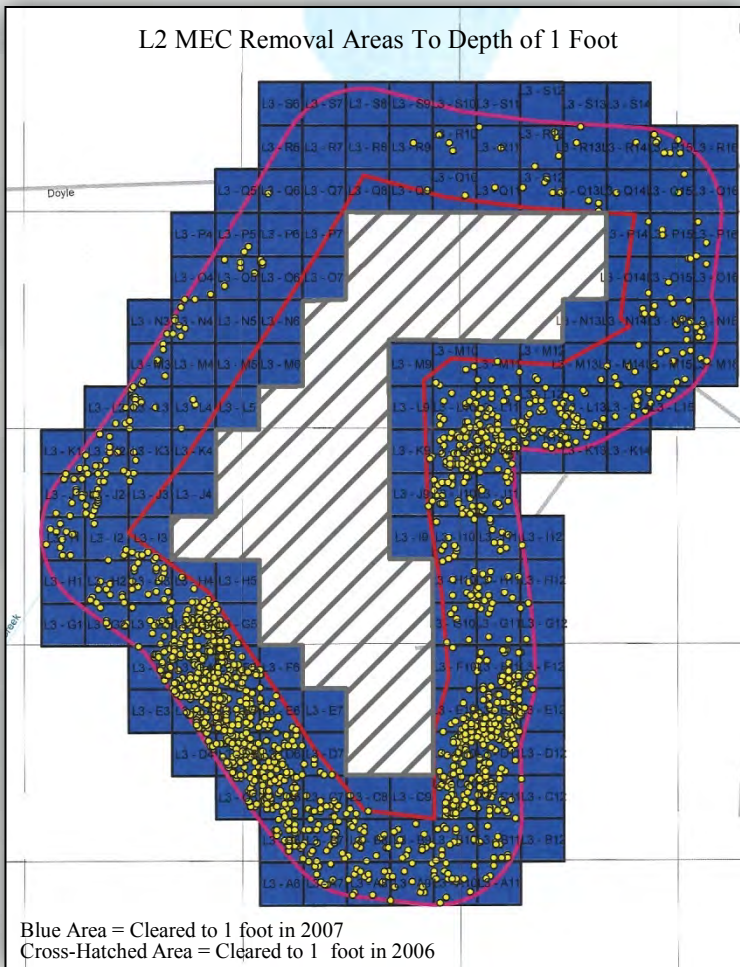


Previous IRP/MMRP Work at L3

IRP		
Report Title	Author	Date
Phase I RI Report, LAP Area	Dames and Moore	1993
Phase II RI Report, LAP Area	Dames and Moore	1994
ROD, Soil and GW Operable Units on the MFG and LAP NPL Sites	AEC	1998
ROD, Soil Operable Unit Interim Sites	AEC	2004
Phase II RA/Closure Report	MWH	2010
MMRP		
EE/CA, Sites L2, L3, L11, L16, L21, and L34	USAESCH	1999
Final CTT Range Inventory	e ² M	2002
HRR for Other Than Operational Ranges at JOAAP	USACE-St. Louis	2005
Final SI Report	e ² M	2005
Final AAR of Sites L2 and L3	USA Environmental, Inc.	2007
Final SSFR MMRP Site L3	MKM	2010
Verification Study of Site L3	USACE-Baltimore	On-going



L3 - MEC and MC Conceptual Site Models



- MEC CSM for L3 is the same as L2 with the following exception:
 - ▶ L3 Primary Sources:
 - Open burning of combustible refuse and munitions crates.
 - Demolition pits.
 - Mass buried munitions items.
- MC CSM for L3 is the same as L2.



RI Data Quality Objectives

L3 Site – 43 acres

- 1. State the Problem.** Same as L2.
- 2. Identify the Goals of the Study.** Same as L2.
- 3. Identify Information Inputs.** Same as L2.
- 4. Define the Boundaries of the Study**
 - IRP L3 Site and 200-ft buffer MRS (JAAP-001-R-01) - 43 acres to depth of instrument detection.
 - Target analytes will be the COCs established in the 2004 ROD.
- 5. Develop the Analytic Approach.** Same as L2.
- 6. Specify Performance or Acceptance Criteria.** Same as L2.

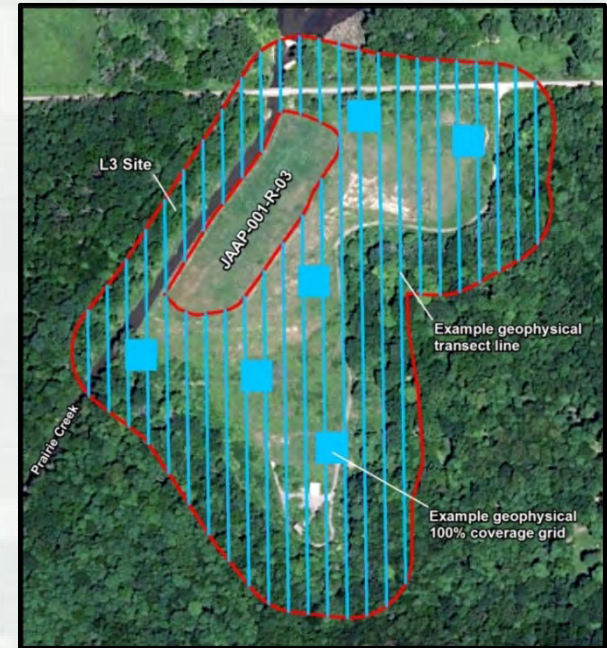


RI Data Quality Objectives

L3 Site – 43 acres

7. Develop the Detailed Plan for Obtaining Data

- Complete surface clearance and vegetation removal, and install instrument verification strip.
- Design geophysical data collection using UXO Estimator and VSP to determine placement and number of transects, grids, and intrusive investigations.
 - ▶ Collect an estimated 25,000 linear ft of transect data. Transect width will be 3 ft and transects will be spaced 60 ft apart.
 - ▶ Investigate grids (e.g., 50 ft x 50 ft) as necessary to satisfy acreage requirements of UXO Estimator and define MEC impacts in high density areas.
 - ▶ Intrusively investigate anomalies on transects and grids.
- Collect MC soil samples at locations where MEC items with exposed filler are found (i.e., release source) or high anomaly density areas.
- Determine the number and location of MC samples based on the results of intrusive investigations.



Remedial Investigation at L34 (Former Burning Area)



L34 Site Map (3.5 acres)



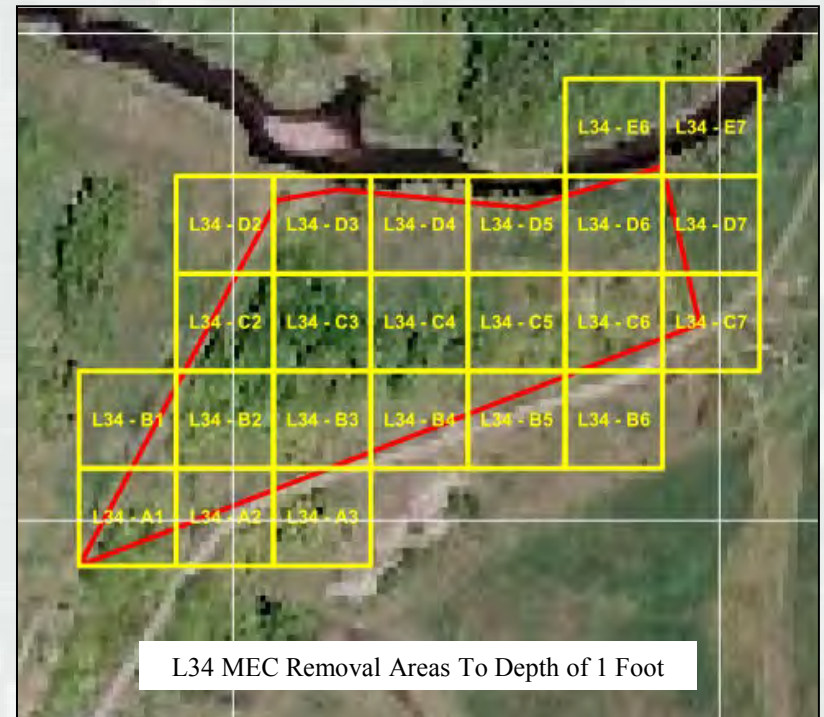
Previous IRP/MMRP Work at L34

IRP		
Report Title	Author	Date
Phase I RI Report, LAP Area	Dames and Moore	1993
Phase II RI Report, LAP Area	Dames and Moore	1994
ROD for Soil and GW Operable Units on the MFG and LAP NPL Sites	AEC	1998
MMRP		
EE/CA, Sites L2, L3, L11, L16, L21, and L34	USAESCH	1999
Final CTT Range Inventory	e ² M	2002
HRR for Other Than Operational Ranges at JOAAP	USACE-St. Louis	2005
Final SI Report	e ² M	2005
Final SSFR MMRP Site L34	MKM	2010



L34 - MEC and MC Conceptual Site Models

- MEC CSM for L34 is the same as L2 with the following exception:
 - ▶ L34 Primary Source:
 - Disposal area for demilitarized ceramic mines
 - Dig and sift MEC removal action was completed to 1 ft bgs (0 MEC items, 2500 lbs of MD recovered)
- MC CSM for L34 is the same as L2.



RI Data Quality Objectives

L34 Site – 3.5 acres

- 1. State the Problem.** Same as L2.
- 2. Identify the Goals of the Study.** Same as L2.
- 3. Identify Information Inputs.** Same as L2.
- 4. Define the Boundaries of the Study**
 - L34 (JAAP-004-R-01) – 3.5 acres to depth of instrument detection.
 - Target analytes will be the COCs established in the 2004 ROD.
- 5. Develop the Analytic Approach**
 - Complete DGM survey (EM61) of the entire site.
 - If DGM survey is completed to instrument depth of detection and intrusive investigations do not discover MEC, then recommend L34 for No Further Action.
- 6. Specify Performance or Acceptance Criteria.** Same as L2.



RI Data Quality Objectives

L34 Site – 3.5 acres

7. Develop the Detailed Plan for Obtaining Data

- Complete surface clearance and vegetation removal, and install instrument verification strip.
- Complete DGM survey of the entire site.
- Intrusively investigate selected anomalies.
- Collect MC soil samples at locations where MEC items with exposed filler are found (i.e., release source) or high anomaly density areas.
- Determine the number and location of MC samples based on the results of intrusive investigations.



Post-RI Activities

L34 Site – 3.5 acres

- Prepare Community Relations Plan.
- Prepare FS to evaluate alternatives.
- Prepare PP to present the preferred alternative.
- Public review/public meeting.
- Prepare ROD to authorize selected remedy.



TCRA at L3 Capped Area



L3 Capped Area Site Map (3.3 acres)



Previous Remedial Action

L3 Capped Area JAAP-001-R-03 (3.3 acres)

- **1998 ROD:**

- ▶ Selected RCRA Subtitle C landfill cap to address MEC and contaminated soil.
- ▶ Selected interim remedies that were further defined in the 2004 ROD.

- **2004 ROD:**

- ▶ Selected final remedies and cleanup goals for soils, which included L3 soils with metals (SRU2) and for L3 soils with explosives and metals (SRU3).
- ▶ ROD Attachment A, *Management Team Agreement on Cleanup Approach and Goals*, established requirements for excavation, confirmatory sampling, and cleanup goals.

- **L3 Capped Area Remedial Action (2006-2008):**

- ▶ Addressed final remedy requirements for the RCRA Subtitle C landfill cap (per the 1998 ROD) and for contaminated soils (per the 2004 ROD).
- ▶ 30,000 cy of soil (with MC and some construction debris) was consolidated over existing debris fill and 3.3 acre RCRA Subtitle C cap was installed.
- ▶ This remedial action left potential MEC in place under the cap.



Action Memorandum

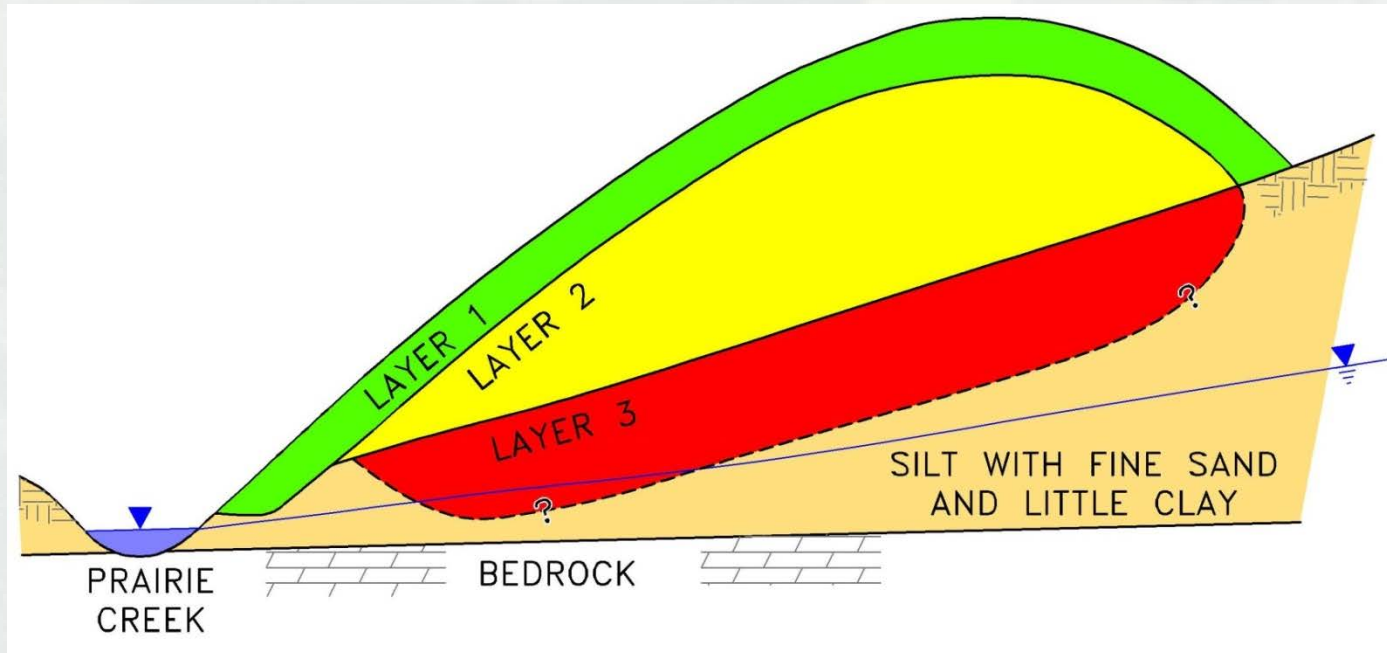
L3 Capped Area JAAP-001-R-03 (3.3 acres)

- During Spring 2011 storms, some of the rip rap placed along Prairie Creek to armor the landfill cap washed away, flood water height was 12 feet above Prairie Creek, and certain MEC and MD were later found downstream.
- L3 Landfill poses a threat to human health and environment:
 - ▶ Future storm events could cause release and/or migration of MEC and MC.
 - ▶ Potential explosive hazards could result in serious injury or death.
- TCRA will mitigate potential hazards and risks from MEC and MC.
- TCRA activities will result in modification to current ROD(s).



Conceptual Site Model

L3 Capped Area JAAP-001-R-03 (3.3 acres)



Layer 1: 22,000 cy, clean topsoil and impermeable liner, negligible probability of MEC/MPPEH.

Layer 2: 30,000 cy, L2 popping furnace material and L3 berms, low probability of MEC/MPPEH.

Layer 3: 31,000 cy, waste left in place, MC-contaminated soil and CD with potential ACM, medium to high probability of MEC/MPPEH.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

1. State the problem

- ▶ L3 Capped Area poses a threat to human health and environment because of potential for fire or explosion, and because weather conditions may cause MEC, MC, and/or ACM to be released and/or migrate from the landfill.

2. Identify the goals of the removal

- ▶ Remove, characterize, and properly dispose of all potential MEC/MPPEH to eliminate potential explosives hazard.
- ▶ Remove, characterize, and properly dispose of all soil contaminated above the ROD cleanup levels to eliminate potential health and environmental risks.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

3. Identify information inputs

- ▶ Historical use of L3.
- ▶ Previous investigation data, remedial action, and munitions responses, including construction records from L3 cap construction.
- ▶ Data collected during the TCRA, to include survey of excavation areas and volumes, types of materials removed, waste characterization sampling data and disposal records, geophysics data, MC confirmatory sampling data, and site restoration.

4. Define the boundaries of the removal

- ▶ Areal extent of L3 Capped Area is 3.3 acres.
- ▶ Vertical extent of TCRA excavation is to bottom of Layer 3 waste but may be limited to depth to groundwater.
- ▶ Target analytes are the COCs established in the 2004 ROD.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

5. Develop approach for removal

- ▶ If excavation encounters groundwater, then stop excavating deeper. Else, continue excavating if debris and/or stained soil are visible.
- ▶ If excavation bottom is visibly free of debris and stained soil, then stop excavating and inspect to verify native soil. Else, continue excavating.
- ▶ If excavation bottom is verified to be native soil, then collect analog geophysics to verify that metal anomalies have been removed. Else, continue removal to resolve all anomalies.
- ▶ If excavation bottom is verified to be free of anomalies, then collect confirmatory soil samples to verify that COCs are below the ROD's lower cleanup values. Else, continue removal of soil until COCs are below lower cleanup values.
- ▶ If waste characterization sampling verifies soil and debris are a non-hazardous special waste or ACM, then dispose of waste at Prairie View RDF. Else, if sampling indicates waste is characteristically hazardous, dispose at Peoria Landfill.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

6. Specify performance or acceptance criteria

- ▶ To verify MEC removal, perform 100% visual inspection and 100% analog geophysics. Resolve all detected anomalies.
- ▶ To verify MC-contaminated soils have been removed, collect and evaluate confirmatory soil samples using the frequency, list of COCs, and evaluation procedures in the 2004 ROD.

COC	Lower Cleanup Value (mg/kg)	Upper Cleanup Value (mg/kg)
1,3,5-TNB	17	386
2,4,6-TNT	200	459
2,6-DNT	20	20
RDX	107	125
Arsenic	21	84
Copper	190	925
Lead	500	500



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

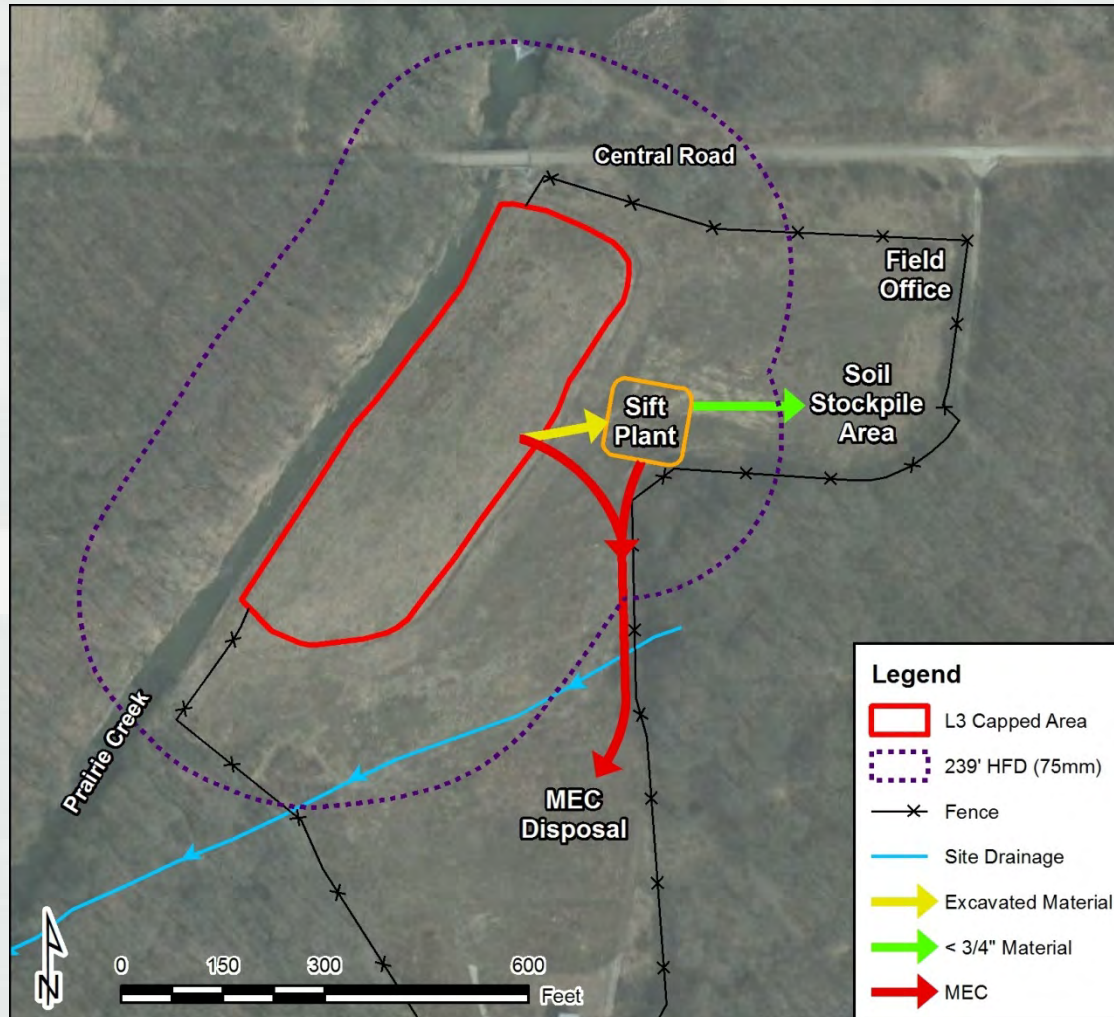
7. Develop detailed plan

- ▶ Install erosion controls before earth-disturbing activity and maintain erosion controls until site is restored.
- ▶ Establish and maintain MSDs and procedures using the 75mm (HE) and coordinate road closures with stakeholders.
- ▶ Remove Layer 1 and re-use it for final backfill. Some of Layer 1 needed to level out sift plant area. Remove and dispose of impermeable liner materials at Prairie View RDF.
- ▶ Remove, sort, and characterize Layer 2 and 3. Excavate and sort oversize and possible asbestos materials at excavation area, convey 6-inch minus material to sift plant, sort through sift plant, complete MPPEH inspection, and stockpile/characterize/dispose soil.
- ▶ Restore site by placing clean soil from Layer 1 and seeding.



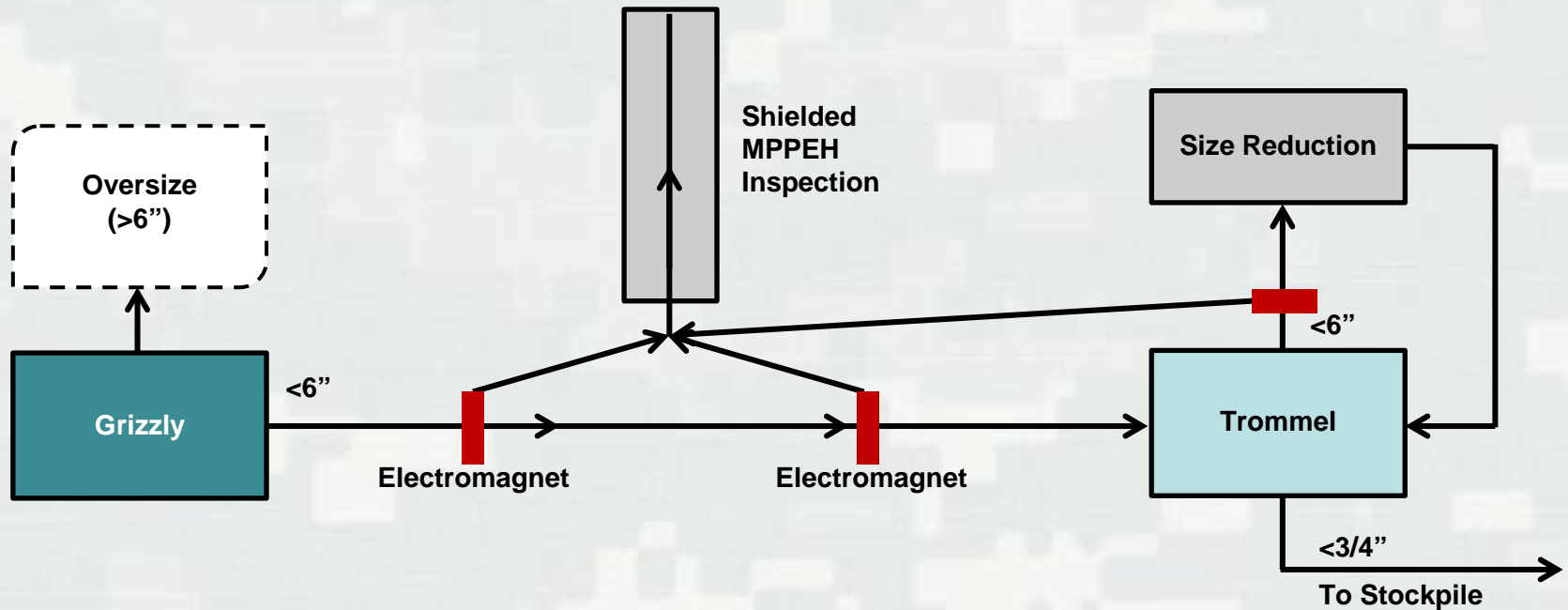
TCRA Activities - Locations

L3 Capped Area JAAP-001-R-03 (3.3 acres)



TCRA Activities - Sorting

L3 Capped Area JAAP-001-R-03 (3.3 acres)



Characterization and Disposal

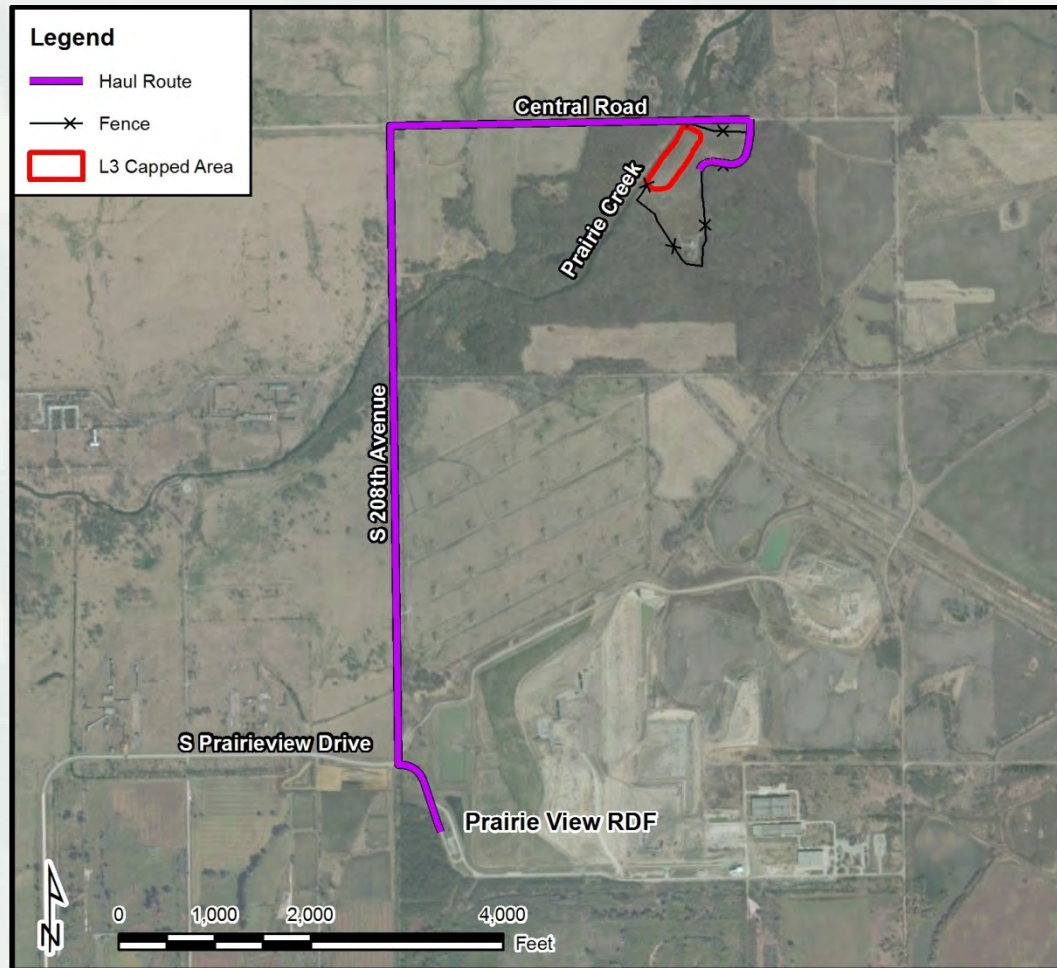
L3 Capped Area JAAP-001-R-03 (3.3 acres)

- Establish waste profile for Layers 2 and 3 prior to excavation.
- Perform MPPEH and ACM inspection on oversize materials and construction debris at the excavation and/or grizzly (>6 inches).
- Perform MPPEH inspection on material that passes the grizzly (<6 inches).
- Remove MEC for on-site disposal, haul MDAS categorized as MD to off-site smelter, haul MDAS categorized as other debris to Prairie View RDF.
- Containerize ACM and dispose at Prairie View RDF.
- Sample soil stockpiles (<3/4 inch) and analyze for MC.
- Dispose of non-hazardous soil and materials at Prairie View RDF.
- Dispose of non-explosive hazardous soil and materials (if any) at Peoria Landfill.



Route to Prairie View RDF

L3 Capped Area JAAP-001-R-03 (3.3 acres)



- Haul route shown was used during previous remedial action. Alternate route is possible going east from site and then south.
- Bridge capacities along haul route will be verified for expected loads and frequencies.



Deliverables and Schedule



Deliverables and Schedule

■ RI Work Plan (L2, L3, and L34)

- | | |
|--|-------------|
| ▶ TPP1 | April 2015 |
| ▶ Draft RI Work Plan to Army | April 2015 |
| ▶ Draft Final RI Work Plan to USEPA/IEPA | June 2015 |
| ▶ TPP2 | July 2015 |
| ▶ Final RI Work Plan | August 2015 |

■ RI at L2

- | | |
|---------------------------------------|----------------|
| ▶ Field Effort | Sep – Nov 2015 |
| ▶ Draft RI Report to Army | January 2016 |
| ▶ Draft Final RI Report to USEPA/IEPA | March 2016 |
| ▶ TPP3 | April 2016 |
| ▶ Final RI Report | May 2016 |



Deliverables and Schedule

- RI, CRP, FS, PP, ROD, and LUCIP at LF34
 - ▶ RI Field Effort Sep - Nov 2015
 - ▶ Draft RI Report to Army January 2016
 - ▶ Draft Final RI Report to USEPA/IEPA February 2016
 - ▶ TPP3 April 2016
 - ▶ Final RI Report May 2016
 - ▶ Draft CRP to Army June 2016
 - ▶ Final CRP August 2016
 - ▶ Draft FS Report to Army June 2016
 - ▶ Draft Final FS Report to USEPA/IEPA August 2016
 - ▶ Final FS Report October 2016
 - ▶ Draft Proposed Plan to Army November 2016
 - ▶ Draft Final Proposed Plan to USEPA/IEPA January 2017
 - ▶ Public Review Mar - Apr 2016
 - ▶ Final Proposed Plan April 2016



Deliverables and Schedule

■ RI, CRP, FS, PP, ROD, and LUCIP at LF34 (Continued)

- | | |
|-----------------------------------|----------------|
| ▶ Draft ROD to Army | May 2017 |
| ▶ Draft Final ROD to USEPA/IEPA | July 2017 |
| ▶ Final ROD | October 2017 |
| ▶ Draft LUCIP to Army | September 2017 |
| ▶ Draft Final LUCIP to USEPA/IEPA | November 2017 |
| ▶ Final LUCIP | December 2017 |

■ RI at L3

- | | |
|---------------------------------------|----------------|
| ▶ Field Effort | Apr – Jun 2017 |
| ▶ Draft RI Report to Army | July 2017 |
| ▶ Draft Final RI Report to USEPA/IEPA | September 2017 |
| ▶ Final RI Report | November 2017 |



Deliverables and Schedule

- TCRA and ROD Modification at L3 Capped Area
 - ▶ TPP1 April 2015
 - ▶ Draft TCRA Work Plan to Army April 2015
 - ▶ Draft Final TCRA Work Plan to USEPA/IEPA June 2015
 - ▶ TPP2 July 2015
 - ▶ Final TCRA Work Plan August 2015
 - ▶ TCRA Field Effort Aug 2015 – Sep 2016
 - ▶ Draft TCRA Report to Army November 2016
 - ▶ Draft Final TCRA Report to USEPA/IEPA January 2017
 - ▶ TPP4 February 2017
 - ▶ Final TCRA Report March 2017
 - ▶ Draft ROD Modification to Army March 2017
 - ▶ Draft Final ROD Modification to USEPA/IEPA June 2017
 - ▶ Final ROD Modification September 2017



MEETING NOTES

Joliet AAP, Illinois

Meeting Date: July 28, 2015

Time: 0900 - 1200

Location: Joliet AAP Farmhouse

Contract: W912DY-09-D-0061, Delivery Order CY02

Project: Joliet Army Ammunition Plant (JOAAP) Time Critical Removal Action (TCRA) and Munition Response Services

Meeting Subject: Technical Project Planning (TPP 2)

Meeting Objective: Review and gain stakeholder concurrence of data quality objectives and technical approaches presented in the work plan documents

Attendees: Art Holz, Joliet AAP
Tom Barounis, USEPA Region 5
Michael Haggitt, IEPA
Wade Spang, USDA-FS Midewin
Bob Hommes, USDA-FS Midewin
Jeff Martina, USDA-FS Midewin
Glen Beckham, USACE Louisville District
Don Peterson, USACE Louisville District
Laura Ruf, USACE Louisville District
Travis McCoun, USACE Baltimore District
Garrick Marcoux, URS
Zac Tannehill, URS
John Heinicke, URS

Telephone Attendees: Robin Paul, AEC
Mac Reed, URS
Andreas Kothleitner, URS

Notes by: Zac Tannehill, URS, 28 July 2015

Following is the meeting agenda:

- 0900-0915: Introductions/Roles/Opening Comments
- 0915-1030: L3 Capped Area TCRA
- 1030-1145: Remedial Investigations (RI) at L2, L3, and L34
- 1145-1200: Wrap-up

During the meeting, the attached TPP slides (35 slides in total) were reviewed and discussed on a slide-by-slide basis. Following are the most significant discussion items and action items.

Slide 3. John Heinicke indicated that during TPP 1 there were discussions regarding the type of decision document that would be completed for L3 Capped Area (e.g., Explanation of Significant Differences [ESD] or ROD Amendment). Tom Barounis indicated that it will need to be a ROD Amendment because the landfill removal is a fundamental change to the original remedy. Travis McCoun suggested that the ROD Modification may need to be completed concurrently to the upcoming work.

Slide 3. Travis McCoun provided an overview of the Installation Restoration Program (IRP) sites versus Military Munitions Response Program (MMRP) sites and how the JOAAP facility has progressed to the current situation where IRP sites are closed and some areas are being re-opened as MMRP sites. The historical IRP sites are co-located with the MMRP sites. Moving forward in the project, the IRP sites will

not be used to describe the MMRP sites. The MRSs will be identified using their AEDB-R numbers (i.e., JAAP-001-R-03 = L3 Capped Area; JAAP-002-R-01 = L2 MRS; JAAP-001-R-01 = L3 MRS; JAAP-004-R-01 = L34 MRS). URS will make the necessary changes to the work plans and future reports.

Slide 5. Tom Barounis asked if there is a recipient facility that can handle all types of waste generated during the project. John Heinicke explained that Prairie View Recycling and Disposal Facility (RDF) will take the asbestos-containing material (ACM), special waste soil, and construction debris. MEC items will be detonated on-site and remaining material documented as safe (MDAS) will be sent to a separate facility for demilitarization.

Slide 8. Tom Barounis asked the procedure for characterizing/identifying the top soil at the L3 Capped Area so that Layer 2 material is not mistakenly used as backfill material. John Heinicke indicated that there is a liner in place separating Layer 1 and Layer 2.

Slide 8. Wade Spang asked about the procedure that would be completed if metal debris was present below the water table. John Heinicke indicated the current plan does not include excavation below the water table. Travis added that URS is likely to encounter bedrock before the water table.

Slide 8. Tom Barounis asked if there is any available data to indicate that groundwater may be encountered before bedrock. John Heinicke indicated that based on recent groundwater monitoring reports, groundwater elevations fluctuate seasonally and could be higher than bedrock elevations. Recent monitoring well data at the L3 Capped Area does not show signs of contamination.

Slide 9. Tom Barounis asked if there is sufficient material in Layer 1 to adequately grade the site following excavation activities. Art Holz indicated there should be enough material, but it will depend on the final depth of excavation into Layer 3.

Slide 9. Tom Barounis asked how close to pre-landfill conditions will the final grade be at the site, and will bank erosion still be a problem. Art Holz indicated that we will want a more natural slope than what existed prior to the landfill design. Wade Spang indicated that a natural sloping on the east side of Prairie Creek should allow high water flows to spread out, which will reduce flow velocity of the creek near the L3 Capped Area and should limit erosion.

Slide 9. Art Holz asked for any further comments on the DQOs before moving on. No other comments or questions were raised.

Slide 10. Glen Beckham asked if there would be any impacts to roads because of the safety arcs required during fieldwork. John Heinicke indicated that the safety arcs would overlap the road when work was taking place on the northern end of the landfill; however, Central Road cannot be accessed from the west because of the new bison range and signs will be placed to the east to restrict access.

Slide 10. Art Holz asked where the Layer 1 material will be stockpiled. John Heinicke indicated that Layer 1 will either be stockpiled to the southeast of the landfill or placed on top of the landfill, but this still needs to be confirmed with the excavation subcontractor. Art requested the work plan figure be revised to show the Layer 1 stockpile location.

Slide 10. Tom Barounis asked if the haul route has been determined. John Heinicke indicated that the haul route will be presented and discussed on a later slide.

Slide 11. Art Holz asked if the excavation subcontractor is setting up a mock sift plant prior to mobilization so that problems encountered in the field can be reduced. John Heinicke indicated that the sift plant will be constructed and tested in Cedar Rapids, Iowa prior to mobilization.

Slide 11. Don Peterson asked if the video in the trailer will be real-time. John Heinicke indicated that it would be.

Slide 11. Wade Spang asked for additional information regarding the magnets shown as part of the sift plant. The team provided some additional information and indicated that goal of the process is to remove all metal (MEC, MPPEH, or other metallic debris).

Slide 12. Wade Spang and Bob Hommes provided supplemental information regarding the current haul route. There is a steel plate covering a culvert on South Coldwater Road that may not be sufficient for truck traffic. Also, trees along the haul route have overgrown the roads considerably and may need to be limbed. Recently, vegetation removal restrictions have been implemented to protect the Northern Long Eared Bat. Per the U.S. Forest Service, removal of trees larger than 3 inches in diameter is prohibited during a certain time period; however, limbing of trees can be completed. URS will evaluate the haul route and let the U.S. Forest Service know what needs to be done to open up the roads for truck traffic.

Slides 12. Wade Spang asked how many trucks would be used during the removal. John Heinicke indicated that approximately five trucks would be used to haul approximately 60 loads per day.

Slide 12. Wade Spang indicated that the U.S. Forest Service will help to coordinate with staff and permittees during the fieldwork to limit the amount of traffic along the haul route.

Slide 16. Tom Barounis asked what the detection capabilities of the geophysical instruments would be. Garrick Marcoux indicated that typically the depth of detection is 11 times the diameter of the subsurface item. Travis McCoun added that the approach is sufficient based on the conceptual site model and L2 has been walked by the Baltimore District with minimal subsurface anomalies detected.

Slide 18. Garrick Marcoux provided an overview of the geophysics, including the geophysical systems verification process. Art Holz indicated that the subsurface at L2 varies significantly across the site and there is the potential for hot rocks.

Slide 20. Travis McCoun indicated the scope of the RI at L3 is 43 acres, no data will be collected within the L3 Capped Area boundary. Art Holz indicated the L3 RI Report needs to include information as to why no data was collected within the previous landfill boundary because of the TCRA.

Slides 21 and 26. John Heinicke indicated the most significant difference in the conceptual site model at L3 is the presence of recently identified 55-gallon drums containing a white chalky solid material. Tom Barounis request the location of the buried 55-gallon drums. The Team pointed out the approximate location of the drums on slide 26. The location of the drums will be added to the RI work plan figures as needed.

Slides 31 and 33. Art Holz asked if ground penetrating radar was still a potential detection technology for the ceramic and glass mines at L34. Garrick Marcoux indicated that it would not be a reliable option based on the anticipated depth (greater than 1 foot below ground surface). URS has proposed to complete investigative trenching to characterize the site, which will provide a better opportunity to identify non-metallic munitions.

Slide 33. Bob Hommes asked if the work at L34 would require any road closures because the MRS is very close to Chicago Road. Travis McCoun indicated that no road closures would be required because L34 is considered a low probability area.

Slide 35. The U.S. Forest Service indicated that Cheryl Nash (URS Biologist) should contact Bill Glass (U.S. Forest Service Biologist) regarding the biological assessment. He will be able to provide additional information regarding local species.

Slide 35. The excavation subcontractor will be able to draw water from Prairie Creek for use on site (dust suppression). Tom Barounis indicated that a water sample would need to be collected at the beginning of the project or URS could use MWH sampling data to characterize the stream. Don Peterson indicated that URS should collect the water sample and not use existing data exclusively.

Slide 35. The bison will be on-site in mid-October or November.

Other. Glen Beckham asked if there were any requirements to hold a public meeting for the TCRA and indicated the public meeting should be added to the schedule if necessary. John Heinicke indicated that a public meeting is typically required after 6 months of fieldwork during a TCRA, but URS will confirm the requirements.

Other. Art Holz indicated that URS will need to schedule with the U.S. Forest Service on the first day of fieldwork to coordinate schedule, obtain keys, passes, etc.

Other. Glen Beckham requested a copy of the URS personnel staffing plan. John Heinicke will provide the plan following the meeting.

Other. Don Peterson indicated that weekly coordination meetings will need to be scheduled while TCRA work is being completed. The team held some discussion of when the meetings should be held. URS will check with the field staff to determine an appropriate time, Monday and Friday meetings will be avoided. Glen Beckham indicated a preference for Tuesday morning.

Other. The team indicated that the U.S. Forest Service should be included in the weekly meetings held during fieldwork. URS will also add the USEPA and IEPA to the monthly status report distribution.

Other. Travis McCoun indicated that URS should keep a running tally of MEC items, MPPEH items, MDAS, and man hours for the duration of the field effort.

Technical Project Planning (TPP) Meeting Sign-In Sheet
Tuesday, July 28, 2015
0900 – 1200 CDT

Name	Organization	Email	Phone
John Heinicke	URS	joh.n.heinicke@aecm.com	402.952.2543
Travis McCann	MAB/USACE	travis.mccann@usace.army.mil	410 962 6728
Tom Barounis	USEPA-R5	barounis-thomas@epa.gov	312-353-5577
Art Helz	JOLIES AAP	ARTHELZ-M.HELZ-CIV@MAIL-MIL	815-423-2870
Garrick Marcoux	URS	garrick.marcoux@aecm.com	865-566-1013
Glen Beckham	USACE	glen.beckham@usace.army.mil	502-315-6799
Laura Ruf	USACE	laura.b.ruf@usace.army.mil	815-391-0705
Bob Hommes	USDA FOREST SERVICE	Rhommes@fs.fed.us	815-423-6370
Nade SPANG	USDA Forest Service Midland	NSpang@fs.fed.us	815-423-6370
Don Peterson	USACE	Donald.D.Peterson@usace.army.mil	309-714-5304
Zac Tannehill	URS	zachary.tannehill@aecm.com	402-952-2656
Michael Haggitt	IEPA	michael.haggitt@illinois.gov	217-558-1989
JEFF MARTIN	USDA FOREST SERVICE	jmartina@fs.fed.us	815-423-6370
Call-In			
Robin Paul	AEC		
Mac Reed	URS		
Andreas Kothleitner	URS		

Time Critical Removal Action and Munitions Response Services Joliet Army Ammunition Plant (JOAAP), Illinois

Technical Project Planning Meeting 2

July 28, 2015



**US Army Corps of Engineers
BUILDING STRONG®**



Objective and Agenda

- Objective: Achieve consensus on the TCRA and RI Work Plans
- Agenda
 - ▶ Review the DQOs, planned work, and schedule
 - ▶ Discuss stakeholder comments on Work Plans
 - ▶ Proposed revisions from Draft-Final Work Plan are shown in this presentation using “→”



Scope of Project



- **TCRA and ROD Modification at L3 Capped Area.** MRS JAAP-001-R-03.
- **RI at L2 MRS, Explosive Burning Ground.** MRS includes IRP Site JAAP-0L2 and MRS JAAP-002-R-01(L2 200-ft buffer).
- **RI At L3 MRS, Demolition Area.** MRS includes IRP Site JAAP-0L3 and MRS JAAP-001-R-01 (L3 200-ft buffer).
- **RI/FS and PP/ROD at L34 MRS Former Burning Area.** MRS JAAP-004-R-01.

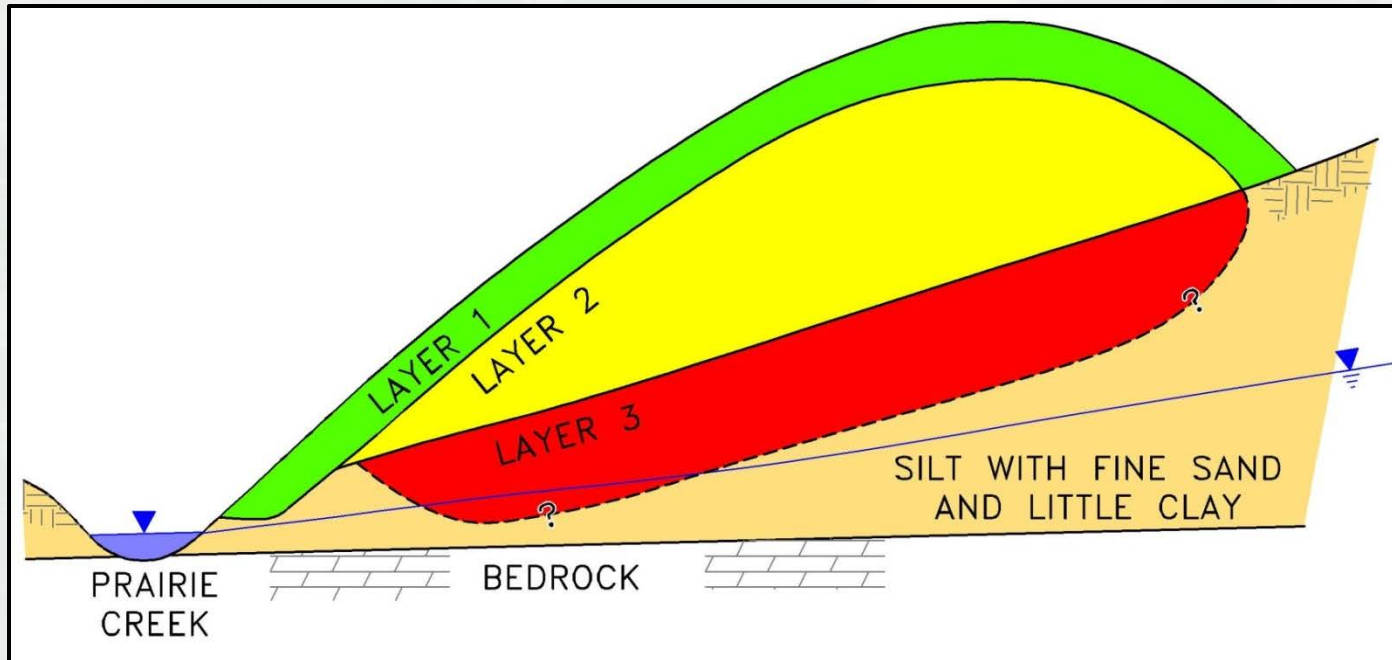


L3 Capped Area Site Map (3.3 acres)



Conceptual Site Model

L3 Capped Area JAAP-001-R-03 (3.3 acres)



Layer 1: 22,000 cy, clean topsoil and impermeable liner.

Layer 2: 30,000 cy, L2 popping furnace material and L3 berms, low probability of MEC/MPPEH.

Layer 3: 31,000 cy, waste left in place, MC-contaminated soil and CD with potential ACM, medium to high probability of MEC/MPPEH.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

DQO	Project Specific Action
1. Statement of the Problem	<ul style="list-style-type: none">▪ L3 Capped Area poses a threat to human health and environment because of potential for fire or explosion, and because weather conditions may cause MEC, MC, and/or ACM to be released and/or migrate from the landfill.
2. Identify the Goal of the Removal	<ul style="list-style-type: none">▪ Remove, characterize, and properly dispose of all potential MEC/MPPEH to eliminate potential explosives hazard.▪ Remove, characterize, and properly dispose of all soil contaminated above the ROD cleanup levels to remove potential unacceptable human health and environmental risks.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

DQO	Project Specific Action
3. Identify Information Inputs	<ul style="list-style-type: none">▪ Historical use of L3.▪ Previous investigation data, remedial action, and munitions responses, including construction records from L3 cap construction.▪ The COCs, remediation goals, and confirmatory sampling procedures established in the 2004 ROD.▪ Decisions made during the TPP.▪ Data collected during the TCRA, to include survey of excavation areas and volumes, types of materials removed, waste characterization sampling data and disposal records, geophysics data, MC confirmatory sampling data, and site restoration.
4. Define the Boundaries of the Study	<ul style="list-style-type: none">▪ Areal extent of L3 Capped Area is 3.3 acres.▪ Vertical extent of TCRA excavation is to bottom of Layer 3 waste but may be limited to depth to groundwater.



TCRA Data Quality Objectives

L3 Capped Area JAAP-001-R-03 (3.3 acres)

DQO	Project Specific Action
5. Develop the Analytical Approach	<ul style="list-style-type: none">▪ If excavation bottom is visibly free of debris and stained soil, then stop excavating and inspect to verify native soil. Else, continue excavating.▪ If excavation bottom is verified to be native soil, then collect analog geophysics to verify that metal anomalies have been removed. Else, continue removal to resolve all anomalies.▪ If excavation bottom is verified to be free of anomalies, then collect confirmatory soil samples to verify that COCs are below the lower cleanup values (2004 ROD). Else, continue removal of soil until COCs are below lower cleanup values.▪ If excavation encounters groundwater, then stop excavating deeper. Else, continue excavating if debris and/or stained soil are visible.▪ If waste characterization sampling verifies soil and debris are a non-hazardous special waste or ACM, then dispose of waste at Prairie View RDF. Else, if sampling indicates waste is characteristically hazardous, dispose at Peoria Landfill.



TCRA Data Quality Objectives

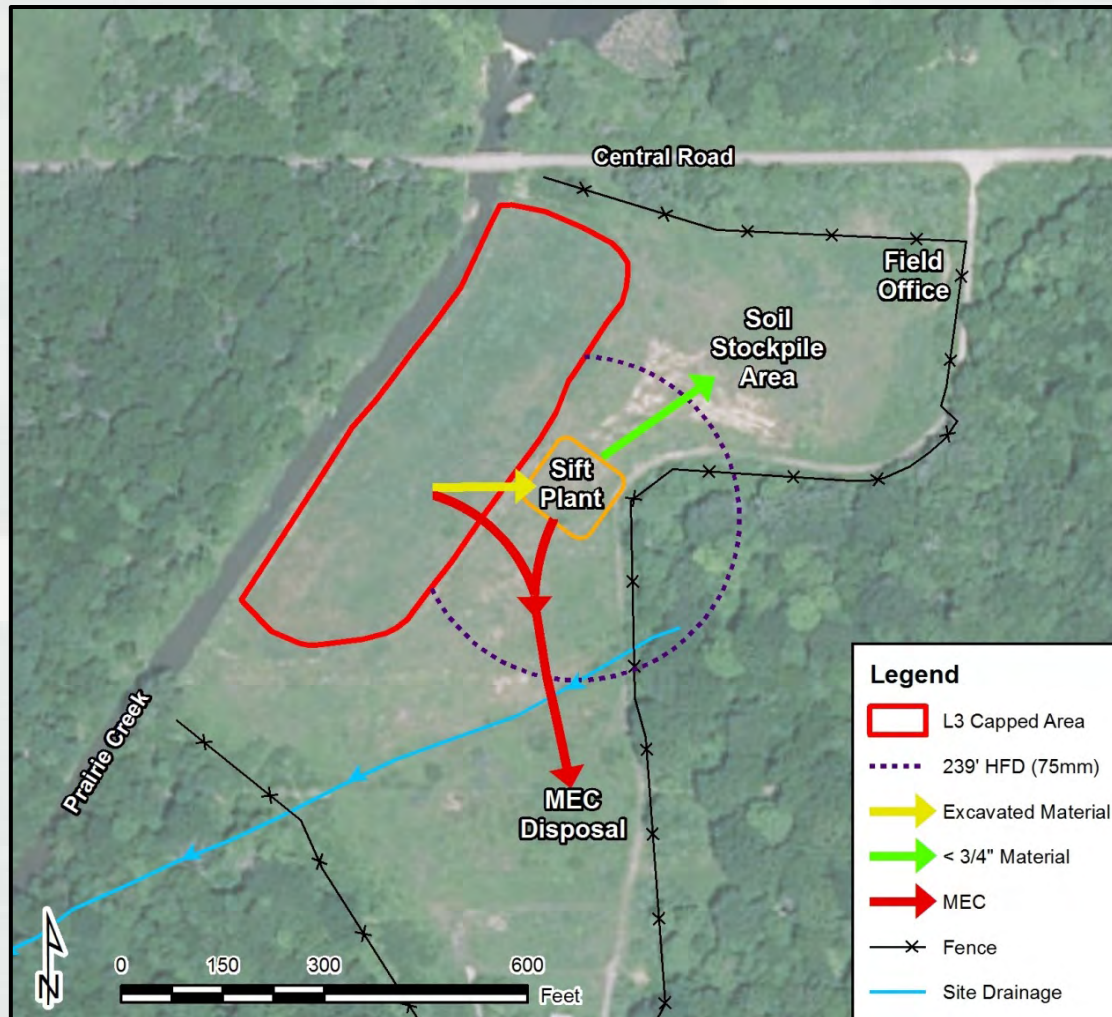
L3 Capped Area JAAP-001-R-03 (3.3 acres)

DQO	Project Specific Action
6. Specify Performance or Objective Criteria	<ul style="list-style-type: none">▪ To verify MEC removal, perform 100% visual inspection and 100% analog geophysics. Resolve all detected anomalies.▪ To verify MC-contaminated soils have been removed, collect and evaluate confirmatory soil samples using the frequency, list of COCs, and evaluation procedures in the 2004 ROD.
7. Develop the Detailed Plan for Obtaining the Data	<ul style="list-style-type: none">▪ Install erosion controls before earth-disturbing activity and maintain erosion controls until site is restored.▪ Establish and maintain MSDs and procedures using the 75mm (HE) and coordinate road closures with stakeholders.▪ Remove Layer 1 and re-use it for final backfill. Some of Layer 1 needed to level out sift plant area. Remove and dispose of impermeable liner materials at Prairie View RDF.▪ Remove, sort, and characterize Layer 2 and 3. Excavate and sort oversize and possible asbestos materials at excavation area, convey 6-inch minus material to sift plant, sort through sift plant, complete MPPEH inspection, and stockpile/characterize/dispose soil.▪ Restore site by placing clean soil from Layer 1 and seeding.



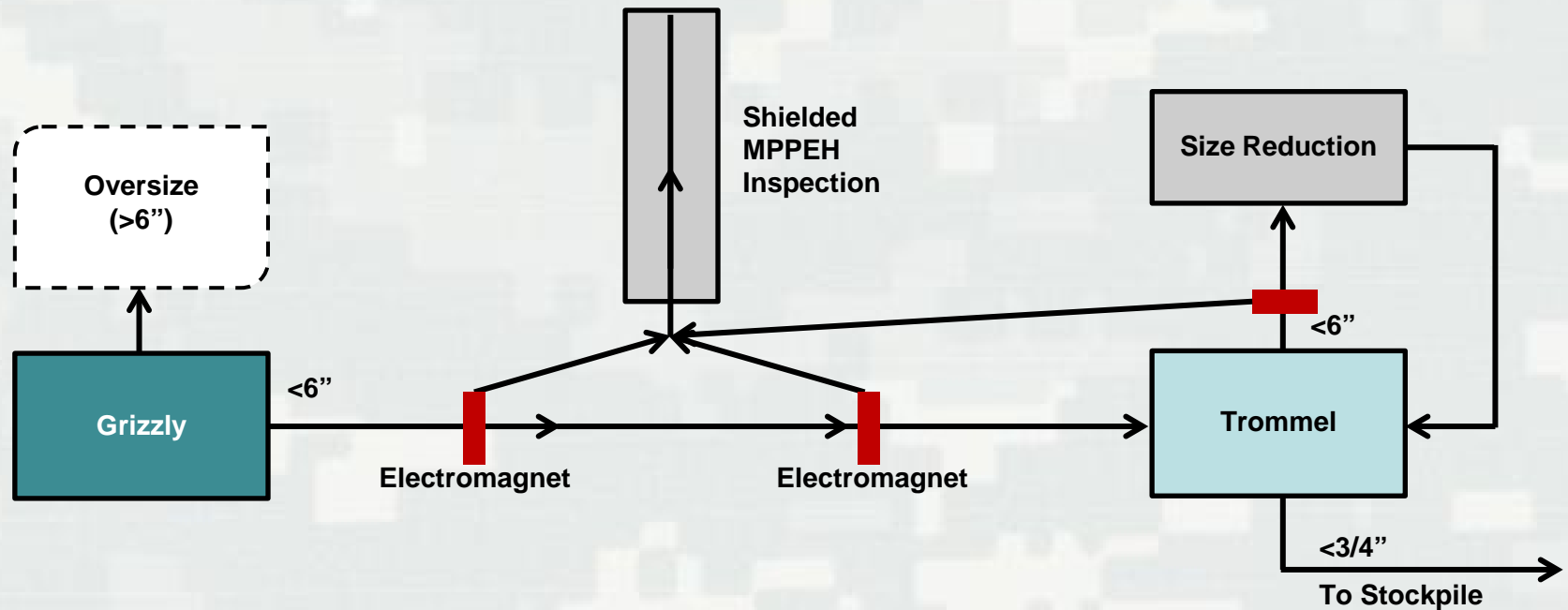
TCRA Activities - Locations

L3 Capped Area JAAP-001-R-03 (3.3 acres)



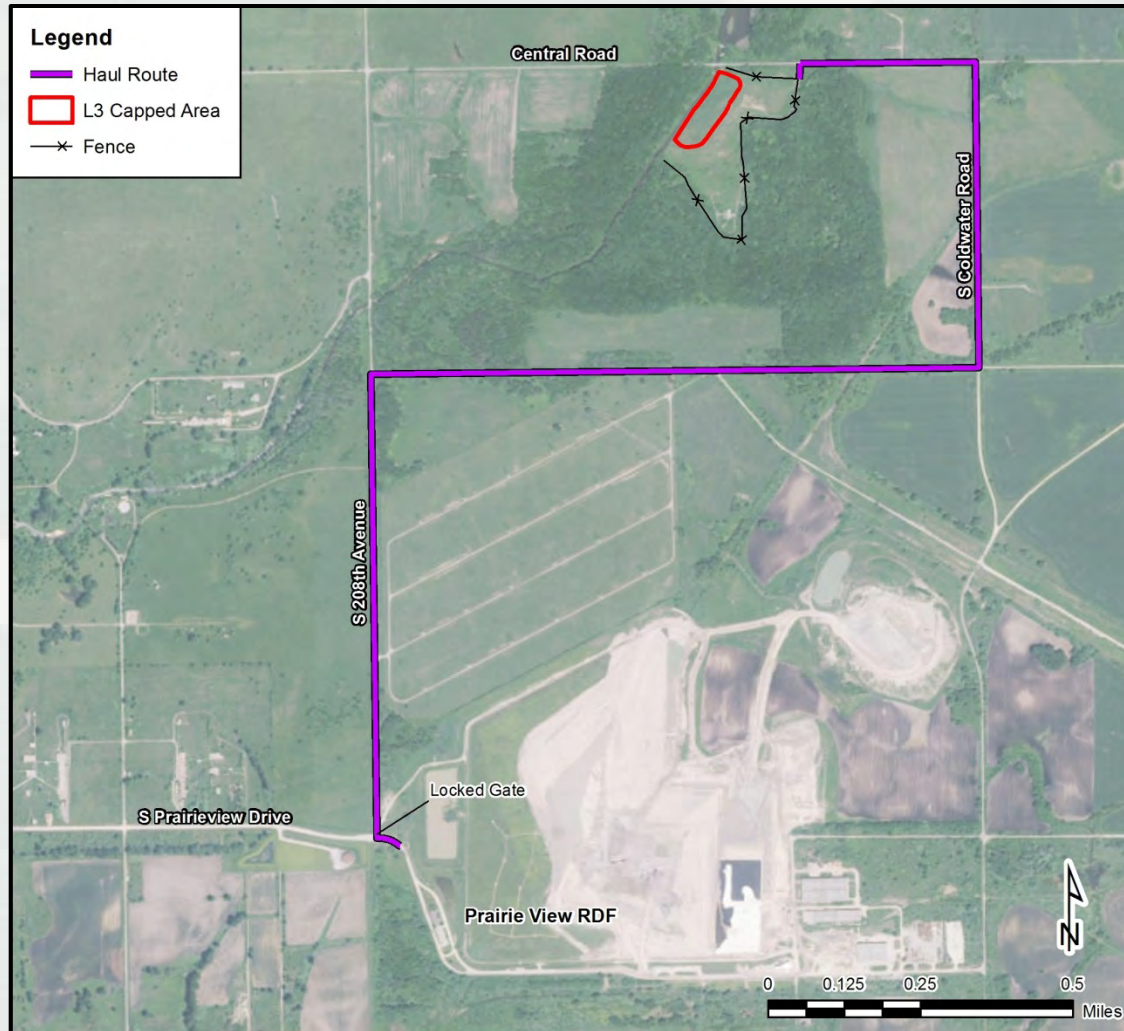
TCRA Activities - Sorting

L3 Capped Area JAAP-001-R-03 (3.3 acres)

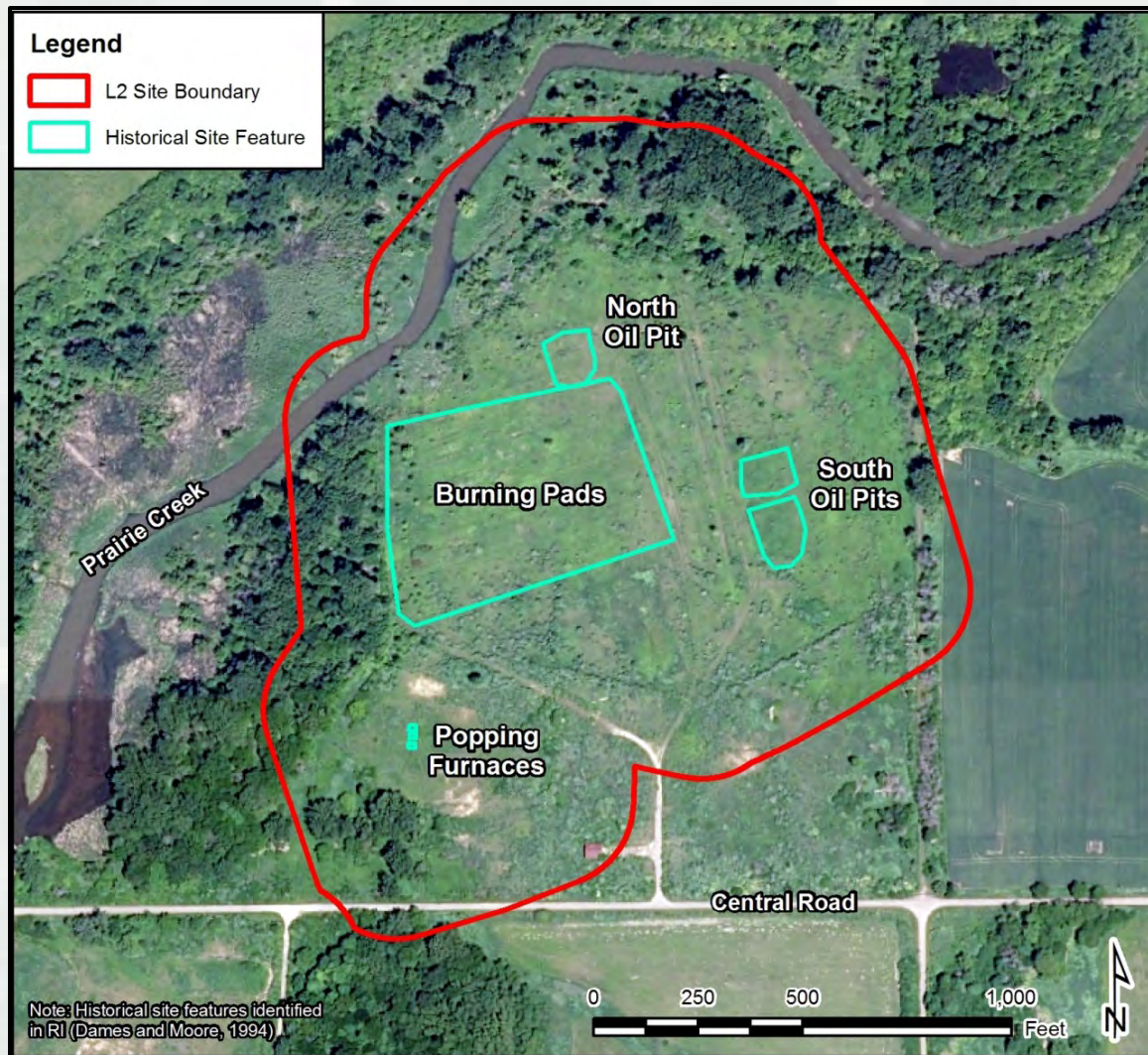


Route to Prairie View RDF

L3 Capped Area JAAP-001-R-03 (3.3 acres)



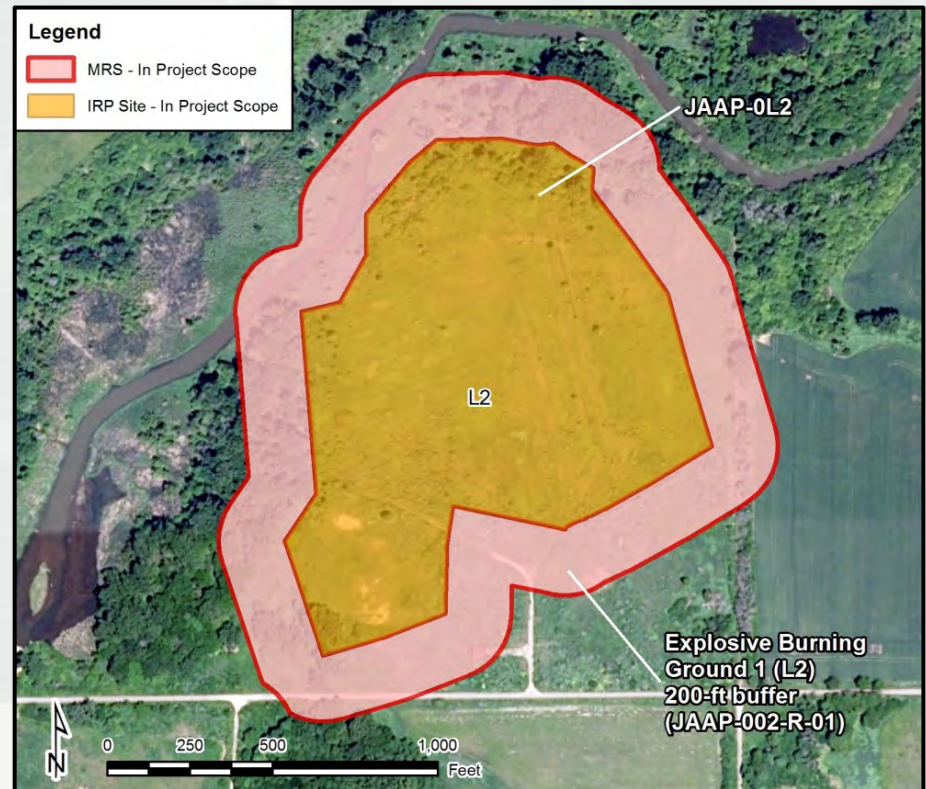
L2 MRS Map (52 acres)



Conceptual Site Model

L2 MRS – 52 acres

- MRS formerly used for open burning of explosives and explosive wastes.
- MRS included six burning pads, three popping furnaces, a bermed area, and several oil pits.
- Historical features were removed during previous IRP remedial action.
- MEC removal action was completed over entire MRS (52 acres shaded yellow and pink).
- MC-contaminated soil remediation completed throughout IRP site (shaded yellow) in accordance with 2004 ROD and documented by Closure Report.
- MEC and associated MC may be present at the MRS.
- Potentially complete MEC and MC pathways for site worker, construction worker, employee, visitor/trespasser, and ecological receptor.



RI Data Quality Objectives

L2 MRS – 52 acres

DQO	Project Specific Action
1. Statement of the Problem	<ul style="list-style-type: none">▪ MEC remaining within the MRS poses an acute hazard of unintentional detonation to receptors. It is also possible that surface and subsurface MEC remaining at the MRS have been partially detonated or deteriorated over time, and may have contaminated soil.
2. Identify the Goal of the Study	<p>Complete an RI that answers the following questions:</p> <ul style="list-style-type: none">▪ Is MEC present at the MRS in surface and subsurface soil?▪ What is the nature and extent of MEC?▪ Has a release of MC occurred (i.e., concentrations above the 2004 ROD lower cleanup values)?▪ If a release has occurred, what is the nature and extent of the MC release?▪ Does remaining MEC/MC pose a potential hazard/risk to current and future receptors?



RI Data Quality Objectives

L2 MRS – 52 acres

DQO	Project Specific Action
3. Identify Information Inputs	<ul style="list-style-type: none">▪ Historical information and reports from previously completed investigations and remedial/removal actions.▪ The COCs and remediation goals established in the 2004 ROD.▪ Decisions made during TPP meetings.▪ Most reasonably anticipated future land use is recreational (i.e., Midewin National Tallgrass Prairie).▪ DGM and analog transect and grid surveys and intrusive investigations of anomalies.▪ Discrete MC samples (metals and explosives).
4. Define the Boundaries of the Study	<ul style="list-style-type: none">▪ Spatial boundaries of the investigation will include the entire MRS (IRP L2 site and plus the 200-ft Buffer MRS [JAAP-002-R-01] = 52 acres).▪ The vertical boundaries of the study will be from the ground surface to the maximum depth of detection of the geophysical instrument in use.



RI Data Quality Objectives

L2 MRS – 52 acres

DQO	Project Specific Action
5. Develop the Analytical Approach	<ul style="list-style-type: none">▪ If an anomaly detected during DGM survey meets anomaly selection criteria, then intrusively investigate the anomaly.▪ If site conditions prevent collection of DGM data, then complete analog survey and intrusively investigate all anomalies.▪ If DGM transect identifies high anomaly density areas or evidence of a pit, then 100 percent coverage grids or additional transects to delineate.▪ If MEC items with exposed filler are discovered, then collect discrete MC soil samples directly below the item.▪ If sample results exceed the lower cleanup value (2004 ROD), collect additional samples vertically (at 2-ft intervals) and horizontally (at 10-ft step-outs).▪ If MC surface soil (0 to 0.5 ft bgs) result exceeds the lower cleanup goal (2004 ROD), then collect surface soil sample(s) in downgradient direction to evaluate potential migration to Prairie Creek.▪ If downgradient surface soil samples exceed a lower cleanup value (2004 ROD) and potential migration is apparent, then collect surface water and sediment samples.▪ If MEC is found during the RI, then complete the MEC Hazard Assessment.



RI Data Quality Objectives

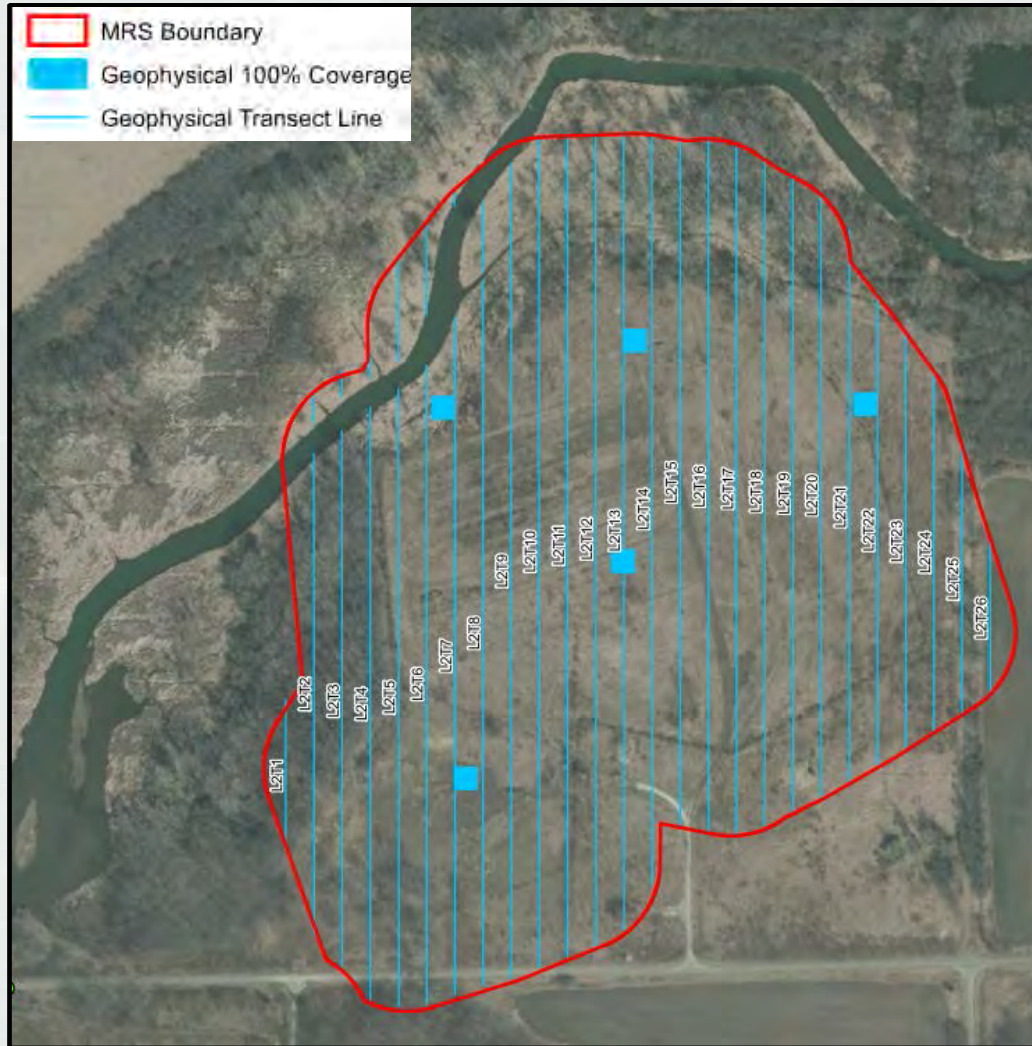
L2 MRS – 52 acres

DQO	Project Specific Action
6. Specify Performance or Acceptance Criteria	<ul style="list-style-type: none">▪ Geophysical activities will achieve applicable quality objectives as stated in the GIP which will be confirmed by the GSV process.▪ Data usability assessment, in combination with professional judgment, will evaluate the usability of analytical data for decision making.▪ Analytical method reporting and/or detection limits will be sufficiently low to meet the lower cleanup values (2004 ROD) for each constituent.▪ MC sample results used for decision making purposes will meet the Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity (PARCCS) parameters criteria.▪ Replicate incremental samples will provide a measure of total sampling error. Replicate data will be used to calculate an RSD, which will be considered acceptable if less than 30%.
7. Develop the Detailed Plan for Obtaining the Data	<ul style="list-style-type: none">▪ Collect approximately 37,000 linear ft of 3-ft wide transects, 60-ft spacing, DGM (EM-61) and analog transect survey to provide a 95 percent confidence that there is no more than 1.0 MEC item/acre at L2.▪ Intrusively investigate anomalies that meet the anomaly selection criteria.▪ Collect additional 100 percent coverage grids in high anomaly density areas that are identified by the VSP output.▪ Collect MC soil samples at intrusive investigation locations where MEC with exposed explosive filler is identified.▪ Collect incremental surface soil samples after MEC demolition operations to determine if explosives in soil exceed the lower cleanup values (2004 ROD).



Planned RI Activities

L2 MRS – 52 acres



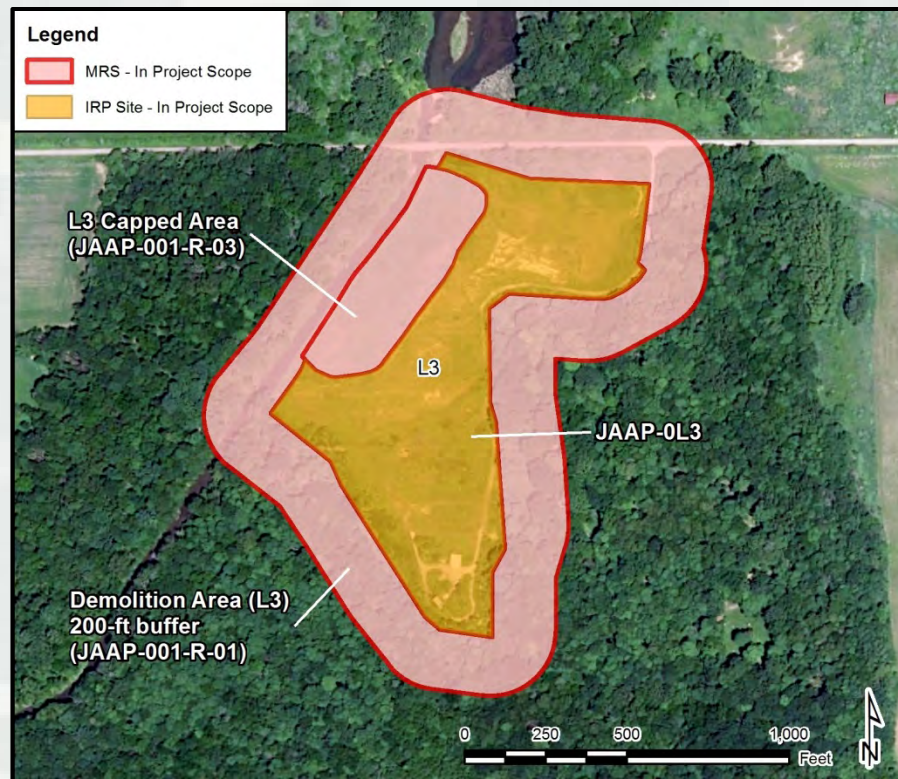
L3 MRS Map (43 acres)



Conceptual Site Model

L3 MRS – 43 acres

- MRS formerly used for open burning of explosives and explosive wastes.
- Most historical features were removed during previous IRP remedial action.
- IRP remedial action included construction of a landfill cap over 3.3 acres (L3 Capped area); this area is the subject of the TCRA.
- MEC removal action was completed over 40 acres (shaded yellow and pink except L3 Capped Area) to 1.0 ft bgs.
- MC-contaminated soil remediation completed at IRP site (shaded yellow) in accordance with 2004 ROD and documented by Closure Report.
- Buried drums containing a white chalky solid were identified during Verification Inspection. The drums were noted to be deteriorating.
- MEC and associated MC may be present at the MRS.
- Potentially complete MEC and MC pathways for site worker, construction worker, employee, visitor/trespasser, and ecological receptor.



RI Data Quality Objectives

L3 MRS – 43 acres

DQO	Project Specific Action
1. Statement of the Problem	<ul style="list-style-type: none">▪ MEC remaining within the MRS poses an acute hazard of unintentional detonation to receptors. It is also possible that surface and subsurface MEC remaining at the MRS have been partially detonated or deteriorated over time, and may have contaminated soil.
2. Identify the Goal of the Study	<p>Complete an RI that answers the following questions:</p> <ul style="list-style-type: none">▪ Is MEC present at the MRS in surface and subsurface soil?▪ What is the nature and extent of MEC?▪ Has a release of MC occurred (i.e., concentrations above the 2004 ROD lower cleanup values)?▪ If a release has occurred, what is the nature and extent of the MC release?▪ Does remaining MEC/MC pose a potential hazard/risk to current and future receptors?▪ What is the number and lateral/vertical extent of the drums?▪ What is the extent of the release of the white chalky solid from the drums?



RI Data Quality Objectives

L3 MRS – 43 acres

DQO	Project Specific Action
3. Identify Information Inputs	<ul style="list-style-type: none">▪ Historical information and reports from previously completed investigations and remedial/removal actions.▪ The COCs and remediation goals established in the 2004 ROD.▪ Decisions made during TPP meetings.▪ Most reasonably anticipated future land use is recreational (i.e., Midewin National Tallgrass Prairie).▪ DGM and analog transect and grid surveys and intrusive investigations of anomalies.▪ Discrete MC samples (metals and explosives).
4. Define the Boundaries of the Study	<ul style="list-style-type: none">▪ Spatial boundaries of the investigation will include the entire MRS (IRP L3 site and plus the 200-ft Buffer MRS [JAAP-001-R-01] = 43 acres).▪ The vertical boundaries of the study will be from the ground surface to the maximum depth of detection of the geophysical instrument in use.



RI Data Quality Objectives

L3 MRS – 43 acres

DQO	Project Specific Action
5. Develop the Analytical Approach	<ul style="list-style-type: none">▪ If an anomaly detected during DGM survey meets anomaly selection criteria, then intrusively investigate the anomaly.▪ If site conditions prevent collection of DGM data, then complete analog survey and intrusively investigate all anomalies.▪ If DGM transect identifies high anomaly density areas or evidence of a pit, then complete 100 percent coverage grids or additional transects to delineate.▪ If MEC items with exposed filler are discovered, then collect discrete MC soil samples directly below the item.▪ If sample results exceed the lower cleanup value (2004 ROD), collect additional samples vertically (at 2-ft intervals) and horizontally (at 10-ft step-outs).▪ If MC surface soil (0 to 0.5 ft bgs) result exceeds the lower cleanup goal (2004 ROD), then collect surface soil sample(s) in downgradient direction to evaluate potential migration to Prairie Creek.▪ If downgradient surface soil samples exceed a lower cleanup value (2004 ROD) and potential migration is apparent, then collect surface water and sediment samples.▪ If MEC is found during the RI, then complete the MEC Hazard Assessment.▪ If drums are found and the contents do not appear to be the same material recovered during previous investigations (i.e., white chalky solid), report information to the project team and evaluate a new sampling approach.



RI Data Quality Objectives

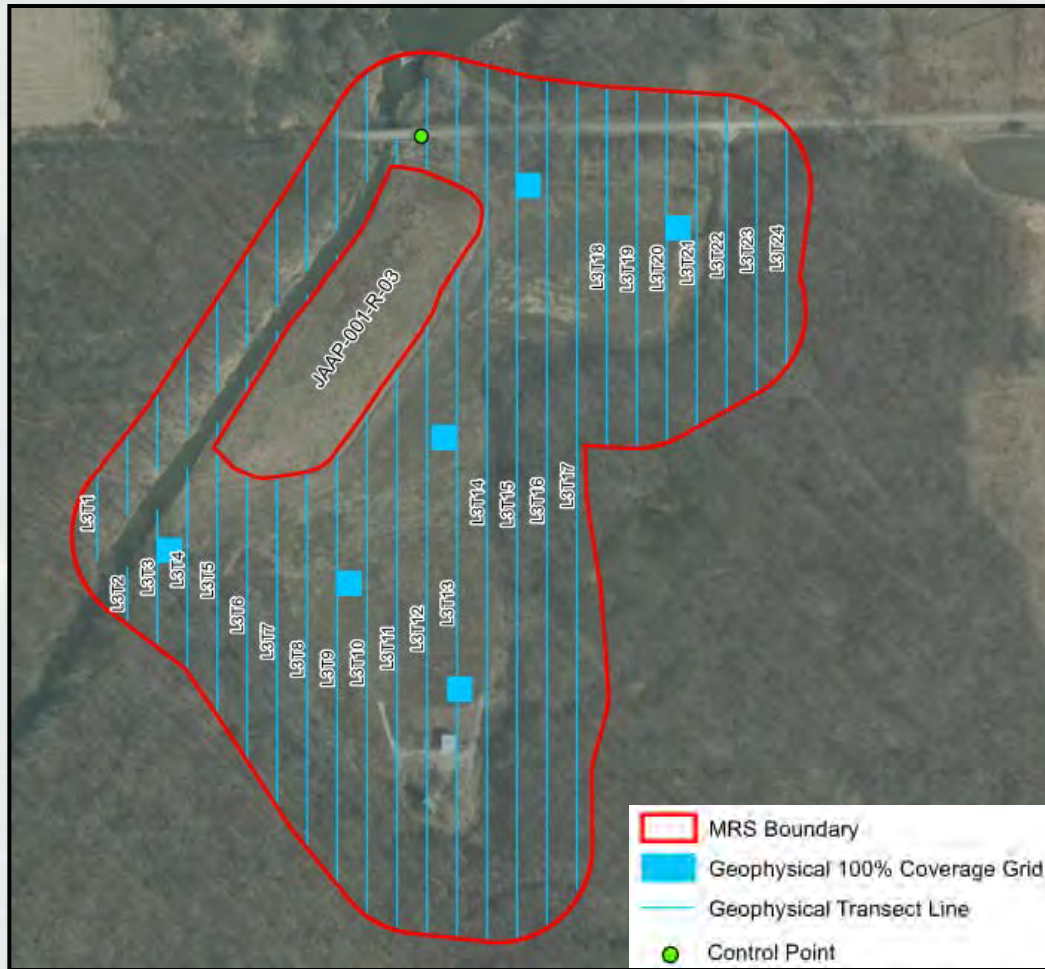
L3 MRS – 43 acres

DQO	Project Specific Action
6. Specify Performance or Acceptance Criteria	<ul style="list-style-type: none">▪ Geophysical activities will achieve applicable quality objectives as stated in the GIP which will be confirmed by the GSV process.▪ Data usability assessment, in combination with professional judgment, will evaluate the usability of analytical data for decision making.▪ Analytical method reporting and/or detection limits will be sufficiently low to meet the lower cleanup values (2004 ROD) for each constituent.▪ MC sample results used for decision making purposes will meet the Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity (PARCCS) parameters criteria.▪ Replicate incremental samples will provide a measure of total sampling error. Replicate data will be used to calculate an RSD, which will be considered acceptable if less than 30%.
7. Develop the Detailed Plan for Obtaining the Data	<ul style="list-style-type: none">▪ Collect approximately 25,000 linear ft of 3-ft wide transects, 60-ft spacing, DGM (EM-61) and analog transect survey to provide a 95 percent confidence that there is no more than 1.0 MEC item/acre at L3.▪ Intrusively investigate anomalies that meet the anomaly selection criteria.▪ Collect additional 100 percent coverage grids in high anomaly density areas that are identified by the VSP output.▪ Collect MC soil samples at intrusive investigation locations where MEC with exposed explosive filler is identified.▪ Collect incremental surface soil samples after MEC demolition operations to determine if explosives in soil exceed the lower cleanup values (2004 ROD).

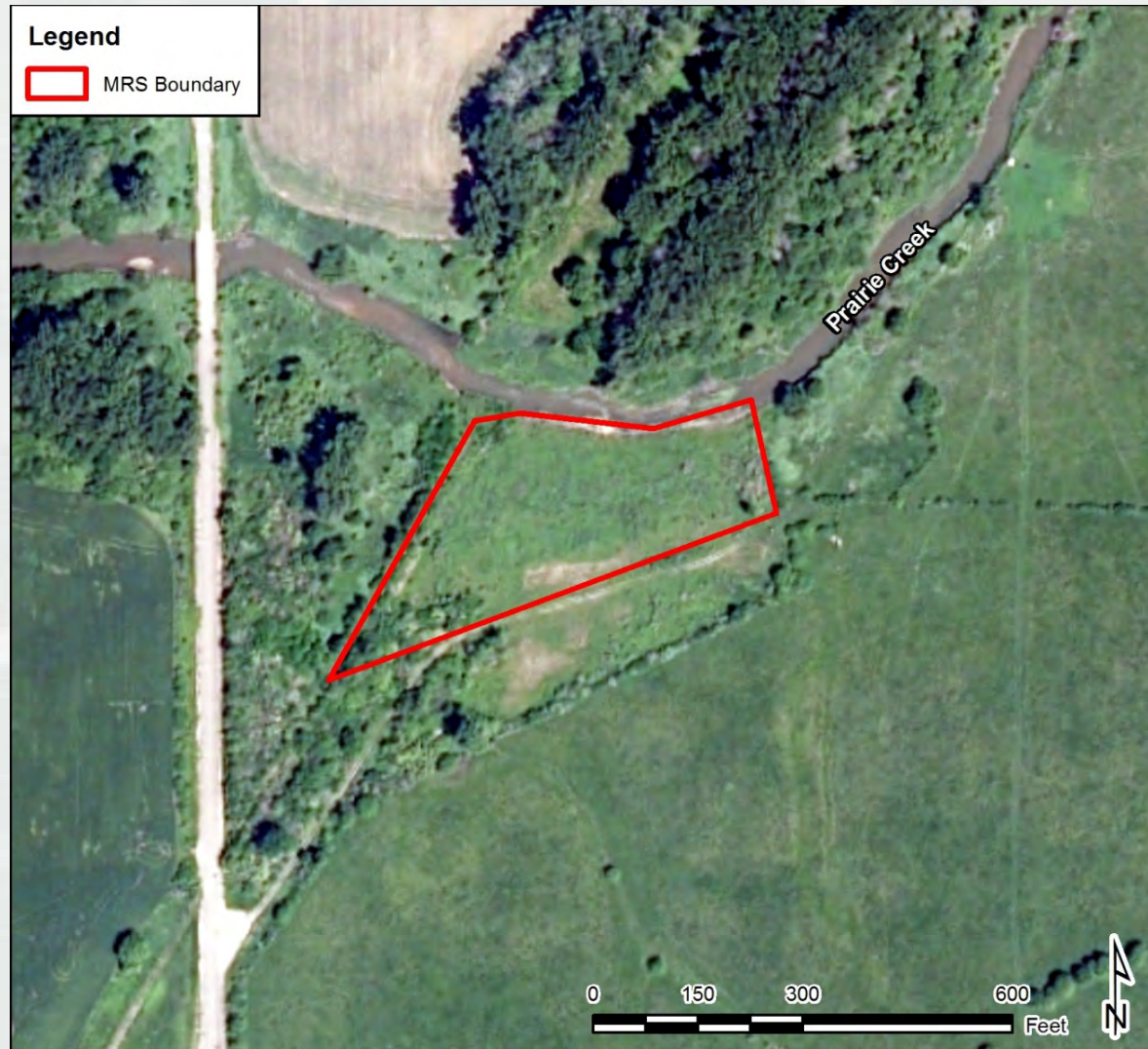


Planned RI Activities

L3 MRS – 43 acres



L34 MRS Map (3.5 acres)



Conceptual Site Model

L34 MRS – 3.5 acres

- Former burning area used as disposal area for demilitarized ceramic mines.
- Historical soil results for metals, explosives, VOCs, SVOCs, PCBs, and pesticides below ROD PRGs, so site was listed as NFA in 1998 ROD (IRP).
- MEC removal action was completed over entire MRS to 1.0 ft bgs:
 - ▶ 5,696 cubic yards were excavated and sifted to 1 inch, metal and burn debris removed, and remainder of soil placed back on site.
 - ▶ No MEC was found.
 - ▶ 2,531 lbs of MD and 2,583 lbs of cultural debris were shipped to smelter.
 - ▶ 1,247 lbs of soil and rock with burn debris waste from “60 ft of burn pit” disposed at Prairie View RDF. Debris waste profile indicates it contained 1 – 2% ceramic/glass.
 - ▶ Upper 1.0 ft of soil was placed back on site after sifting.
- Non-metallic MEC/MPPEH (ceramic mines) and MC including burn residuals may be present.
- Potentially complete MEC and MC pathways for site worker, construction worker, employee, visitor/trespasser, and ecological receptor.



RI Data Quality Objectives

L34 MRS – 3.5 acres

DQO	Project Specific Action
1. Statement of the Problem	<ul style="list-style-type: none">▪ Remaining MEC poses an acute hazard of unintentional detonation to receptors. It is also possible that surface and subsurface MEC remaining at the MRS have been partially detonated or deteriorated over time, and may have contaminated soil.
2. Identify the Goal of the Study	<p>Complete an RI that answers the following questions:</p> <ul style="list-style-type: none">▪ Is MEC (non-metallic mines or other) present at the MRS in surface and subsurface soil?▪ What is the nature and extent of MEC?▪ Is burn residual present below the upper 1.0 ft of soil that was replaced?▪ Has a release of MC occurred (i.e., concentrations above 2004 ROD lower cleanup values)?▪ If a release has occurred, what is the nature and extent of MC release?▪ Does remaining MEC/MC pose a potential hazard/risk to current and future receptors?



RI Data Quality Objectives

L34 MRS – 3.5 acres

DQO	Project Specific Action
3. Identify Information Inputs	<ul style="list-style-type: none">▪ Historical information and reports from previously completed investigations and remedial/removal actions.▪ The COCs and remediation goals established in the 2004 ROD.▪ Decisions made during TPP meetings.▪ Most reasonably anticipated future land use is recreational (i.e., Midewin National Tallgrass Prairie).▪ Investigative trenching and visual inspection results.▪ Discrete MC sample results from below MEC items with exposed filler and burning areas if identified.
4. Define the Boundaries of the Study	<ul style="list-style-type: none">▪ Spatial boundaries of the investigation will be the L34 MRS (JAAP-004-R-01), approximately 3.5 acres.▪ The vertical boundaries of the study will be from the ground surface to a minimum depth of 2 ft, to be extended vertically downward (no deeper than water table) if MPPEH is observed or an MC release has occurred.



RI Data Quality Objectives

L34 MRS – 3.5 acres

DQO	Project Specific Action
5. Develop the Analytical Approach	<ul style="list-style-type: none">→ If investigative trenching identifies subsurface disposal or burning activity, then extend trenching vertically and horizontally to delineate the volume of material.If MEC items with exposed filler are discovered, then collect discrete MC soil samples directly below the item.→ If burned material is identified, then collect discrete MC soil samples to determine nature and extent.If discrete sample results exceed the lower cleanup value (2004 ROD), collect additional samples vertically (at 2-ft intervals) and horizontally (at 10-ft step-outs).If discrete surface soil (0 to 0.5 ft bgs) result exceeds the lower cleanup value (2004 ROD), then collect discrete surface soil sample(s) in downgradient direction to evaluate potential migration to Prairie Creek.If the downgradient surface soil samples exceed a lower cleanup value (2004 ROD) and potential migration is apparent, then collect surface water and sediment samples.If MEC is found during the RI, then complete the MEC Hazard Assessment.

→ = change from Draft Final WP



RI Data Quality Objectives

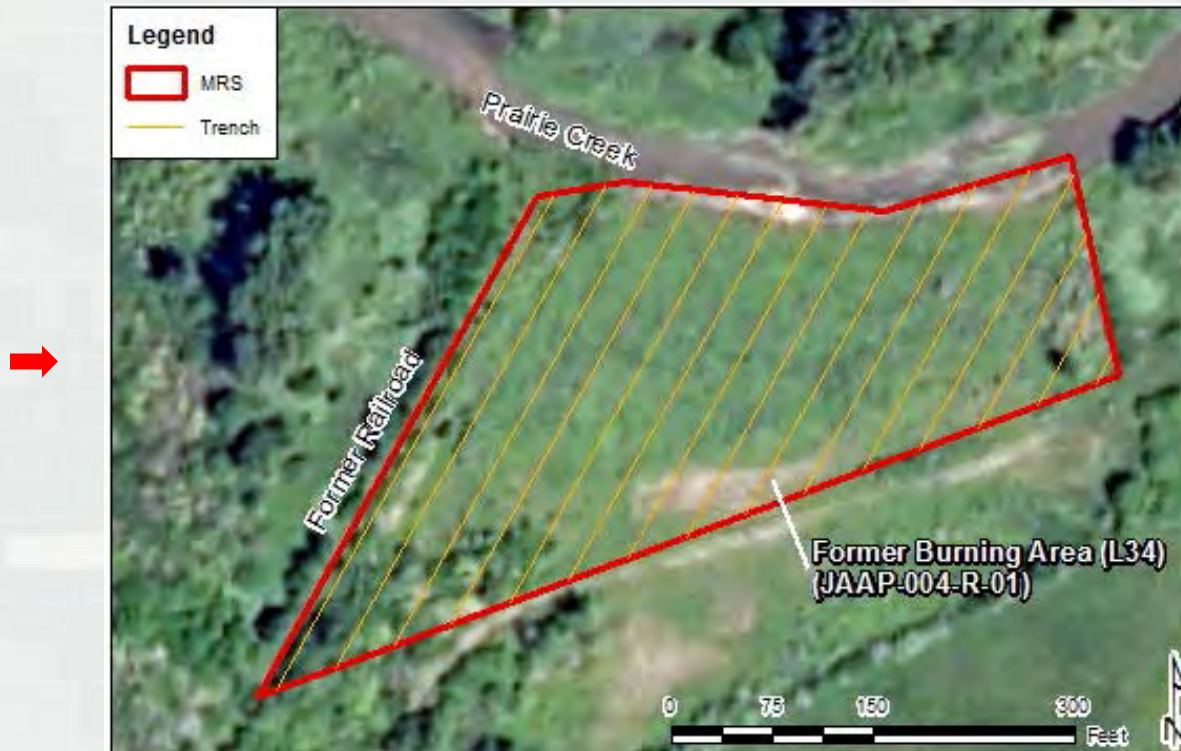
L34 MRS – 3.5 acres

DQO	Project Specific Action
6. Specify Performance or Objective Criteria	<ul style="list-style-type: none">▪ Trenches will be 100% visually inspected, logged, and site-related activities (e.g., ceramic mine disposal, burn residuals) will be photographed and recorded using GPS.▪ Data usability assessment, in combination with professional judgment, will evaluate the usability of analytical data for decision making.▪ Analytical method reporting and/or detection limits will be sufficiently low to meet lower cleanup values (2004 ROD) for each constituent.▪ MC sample results used for decision making purposes will meet the Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity (PARCCS) parameters criteria.▪ Replicate incremental samples will provide a measure of total sampling error. Replicate data will be used to calculate an RSD, which will be considered acceptable if less than 30%.
7. Develop the Detailed Plan for Obtaining the Data	<ul style="list-style-type: none">▪ Complete 4,128 linear ft of investigative trenches (2-ft deep by 30-ft on center) across entire MRS.▪ Collect discrete MC soil samples at locations where MEC with exposed explosive filler or burned material is identified.▪ Collect incremental surface soil samples after MEC demolition operations to determine if explosives in soil exceed the lower cleanup values (2004 ROD).



Planned RI Activities

L34 MRS – 3.5 acres

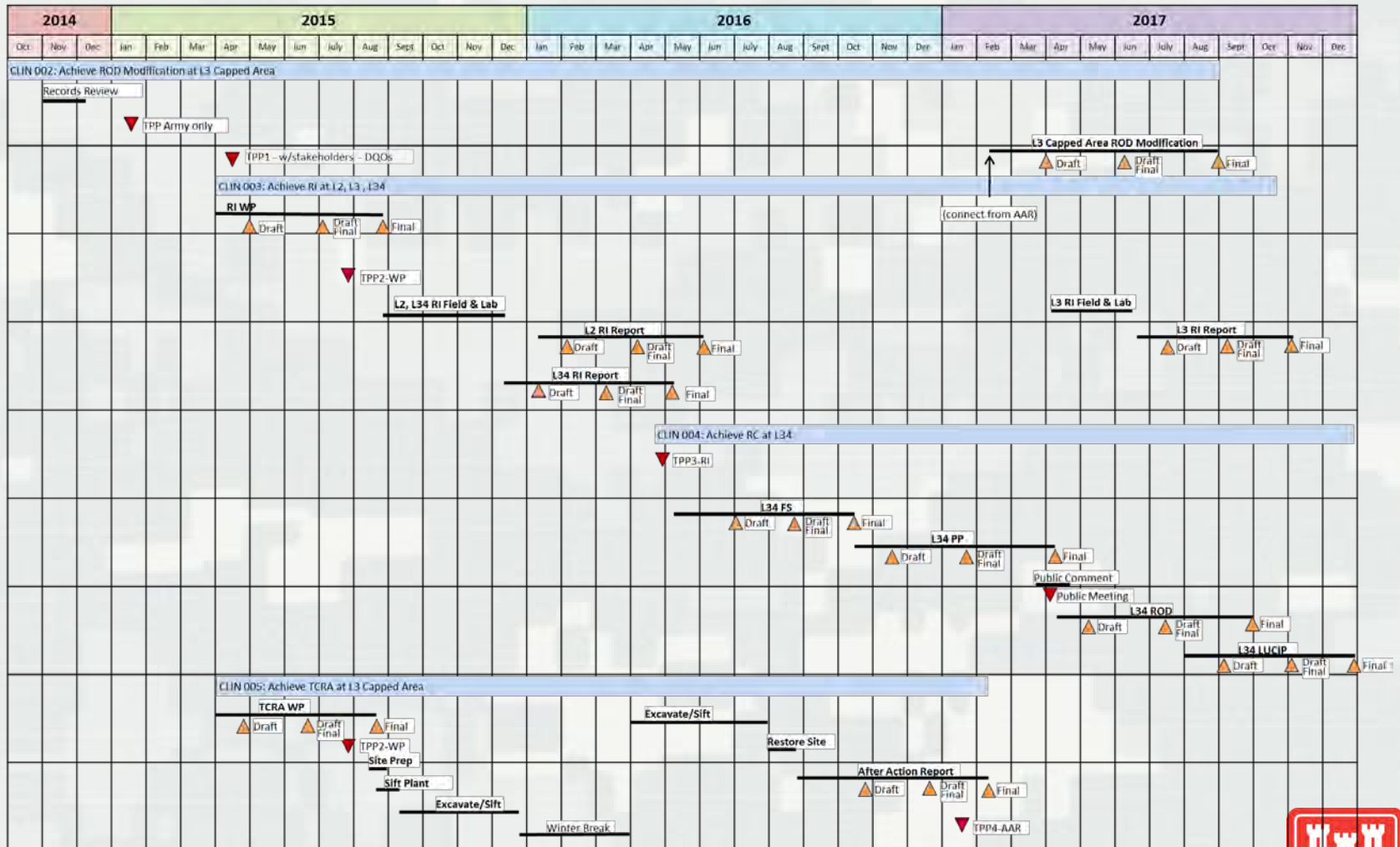


Schedule at a Glance (handout)

Joliet AAP – TCRA and MRS

SCHEDULE AT A GLANCE

Date: 07.08.15



Logistics / Additional Issues

- Prior to intrusive activity, biologist will evaluate MRSs for ecological receptors and critical habitat.
- Access roads, haul route, and entry gate.
- Location of nearest emergency shelter.
- Source of water.
- Unexpected finds during TCRA or RI.
- Coordination with USEPA, IEPA, and USFS during work.
- Status of Bison range.



Photographic Log

PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 1

Description:

Trenching activities completed
at the L34 MRS using EMM.



Photograph No. 2

Description:

Example of a trench
completed at the L34 MRS.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 3

Description:

Trench material from the 1-2 ft. interval was placed on plastic sheeting prior to inspection.



Photograph No. 4

Description:

Excavated trench material and the trench base/sidewalls were visually inspected by qualified UXO technicians.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 5

Description:

Excavated trench material and the trench base/sidewalls were visually inspected by qualified UXO technicians.



Photograph No. 6

Description:

Example trench base and sidewall following inspection by qualified UXO technicians.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 7

Description:

Trench No. 2: Pieces of M5
ceramic mine (MDAS)
recovered from the 0-1 ft.
interval.



Photograph No. 8

Description:

Trench No. 2: Pieces of M5
ceramic mine (MDAS)
recovered from the 1-2 ft.
interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 9

Description:

Trench No. 3: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval.



Photograph No. 10

Description:

Trench No. 3: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 11

Description:

Trench No. 4: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval. Please note that the whiteboard was mislabeled. The correct interval is 0-1 ft.



Photograph No. 12

Description:

Trench No. 4: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 13

Description:

Trench No. 5: Pieces of M5 ceramic mine (MDAS) and other metallic debris (e.g., piece of railroad track) recovered from the 0-1 ft. interval.



Photograph No. 14

Description:

Trench No. 5: Pieces of M5 ceramic mine (MDAS) and recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

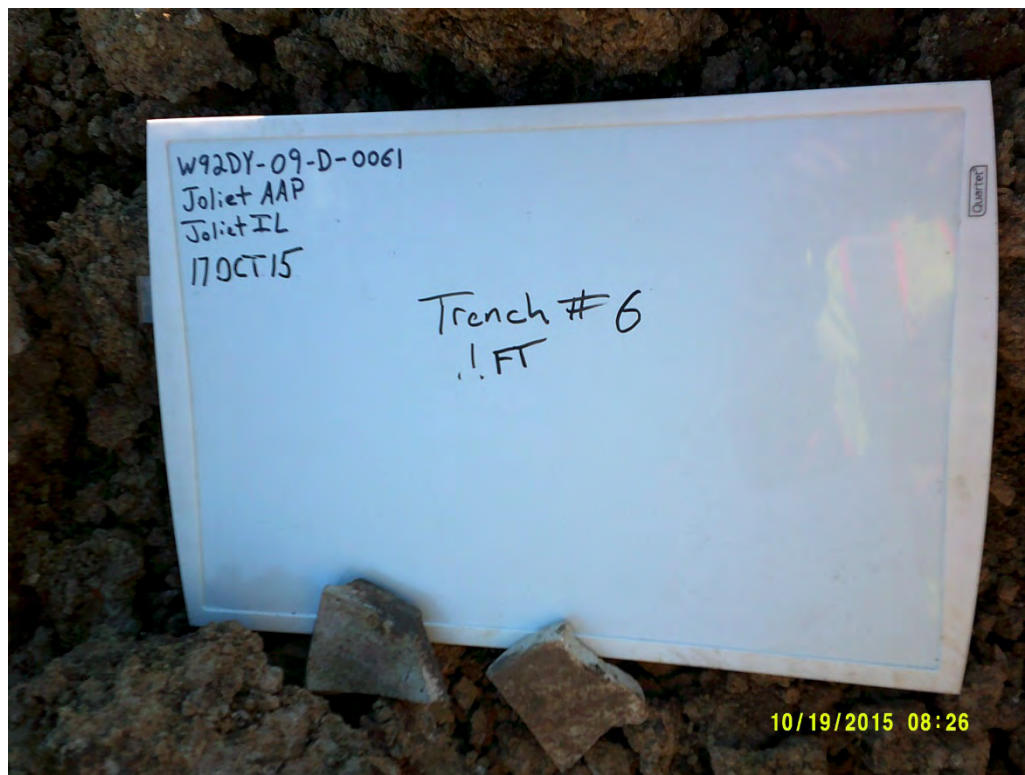
USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 15

Description:

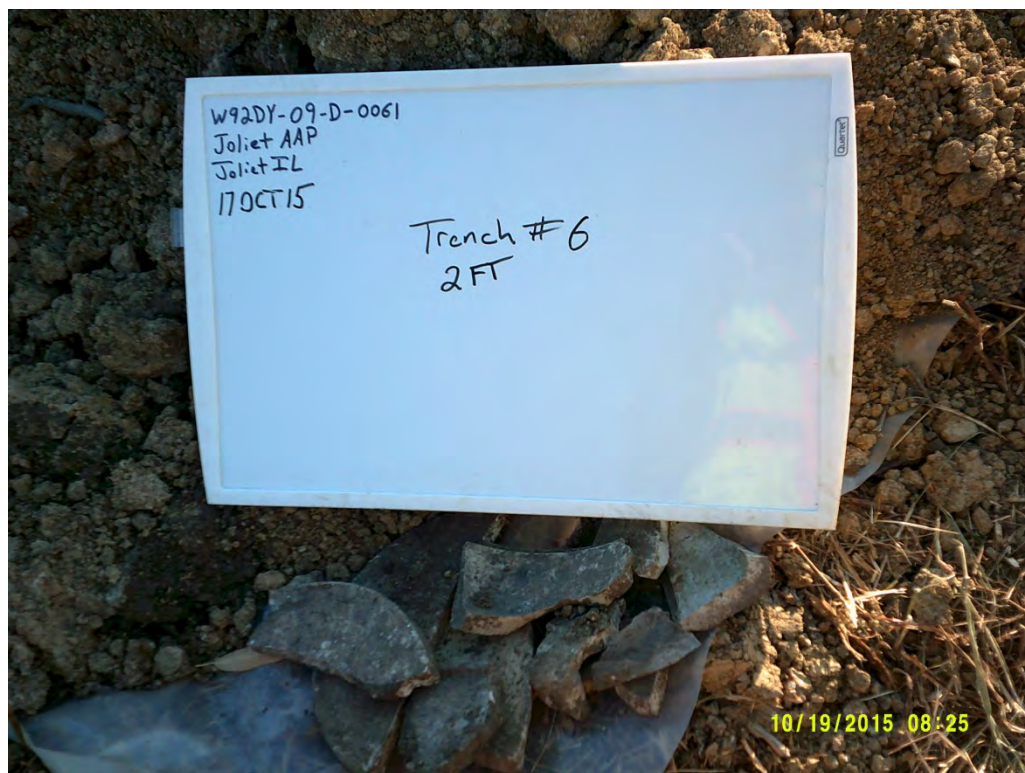
Trench No. 6: Pieces of M5 ceramic mine (MDAS) recovered from the 0-1 ft. interval.



Photograph No. 16

Description:

Trench No. 6: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 17

Description:

Trench No. 7: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval.



Photograph No. 18

Description:

Trench No. 7: Pieces of M5 ceramic mine (MDAS) and other metallic debris (e.g., piece of railroad track) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 19

Description

Trench No. 8: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval.



Photograph No. 20

Description:

Trench No. 8: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 21

Description:

Trench No. 9: Pieces of M5 ceramic mine (MDAS) recovered from the 0-1 ft. interval.



Photograph No. 22

Description:

Trench No. 9: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 23

Description:

Trench No. 10: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval.



Photograph No. 24

Description:

Trench No. 10: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 25

Description:

Trench No. 11: Pieces of M5 ceramic mine (MDAS) recovered from the 0-1 ft. interval.



Photograph No. 26

Description:

Trench No. 11: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 27

Description:

Trench No. 12: Pieces of M5 ceramic mine (MDAS) recovered from the 0-1 ft. interval.



Photograph No. 28

Description:

Trench No. 12: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 29

Description:

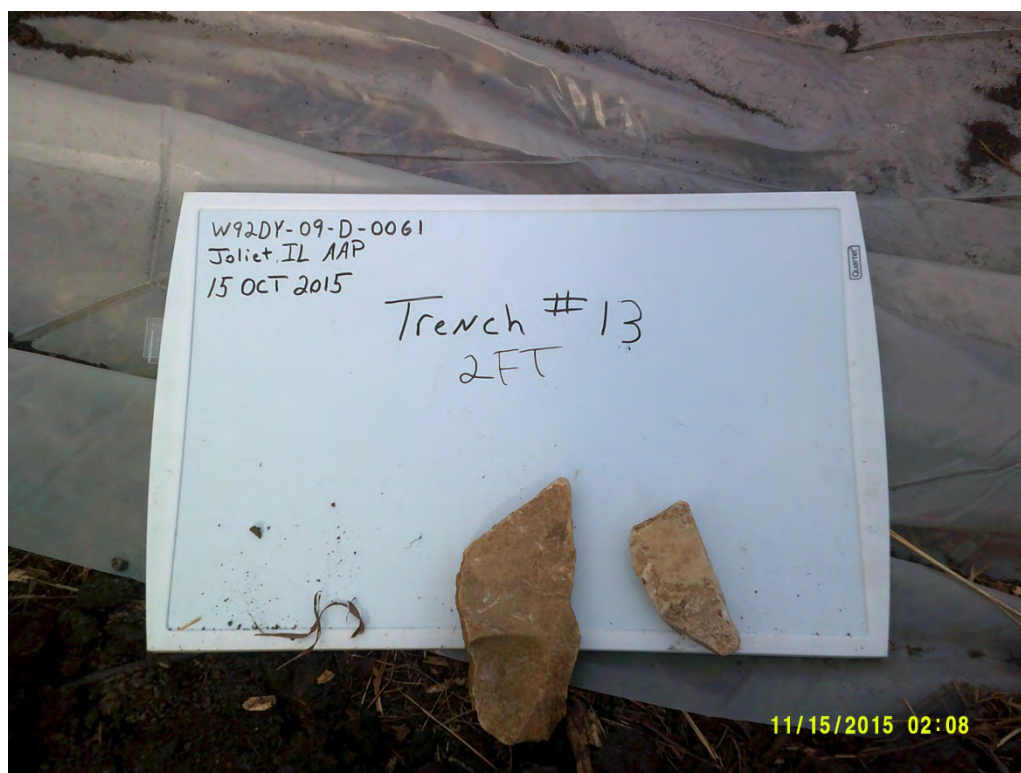
Trench No. 13: Pieces of other
metallic debris recovered from
the 0-1 ft. interval.



Photograph No. 30

Description:

Trench No. 13: Pieces of M5
ceramic mine (MDAS)
recovered from the 1-2 ft.
interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 31

Description:

Trench No. 14: Pieces of M5 ceramic mine (MDAS) and other metallic debris recovered from the 0-1 ft. interval.



Photograph No. 32

Description:

Trench No. 14: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



PHOTOGRAPHIC LOG

Remedial Investigation at the L34 MRS
Joliet Army Ammunition Plant, Illinois

USACE – Louisville District

Contract No. W912DY-09-D-0061

Photograph No. 33

Description:

Trench No. 15: Pieces of other metallic debris and small arms recovered from the 0-1 ft. interval.



Photograph No. 34

Description:

Trench No. 15: Pieces of M5 ceramic mine (MDAS) recovered from the 1-2 ft. interval.



Daily Field Management Reports (provided on CD)

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 001
Date: 09-29-2015

DAILY SITE REPORT

Site Operating Hours: 1300-1400

Work Performed: Flagged perimeter of L34 for vegetation removal using handheld GeoXT. Several inaccessible areas due to heavy vegetation were noted at the berm and in the southwest corner.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Zac Tannehill
Site Manager
09-29-2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 001
Date: 09-29-2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Deputy PM: Zac Tannehill – 1	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea (off site)	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington (off site)	USACE OESS:
URS Project Geo: Darrell Hall (off site)	
URS Geo QC: Garrick Marcoux (off site)	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech II	Trevor Brown	1	Escort

Subcontractors

Name	Company	Hours Worked	Role

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 005
Date: 10-06-2015

DAILY SITE REPORT

Site Operating Hours: 0800 - 1630

Work Performed: Schonstedt assisted escort for land vegetation removal in L34 and the IVS. Used handheld GeoXT to ensure boundary accuracy.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

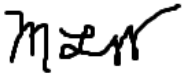
Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Matt Legg
UXO Tech II
10-06-2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 005
Date: 10-06-2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Deputy PM: Zac Tannehill	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington	USACE OESS:
URS Project Geo: Darrell Hall	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech II	Matthew Legg	8	Escort

Subcontractors

Name	Company	Hours Worked	Role
Robin Rowland	Western Contractors	8	Veg removal

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 007
Date: 10-08-2015

DAILY SITE REPORT

Site Operating Hours: 0630 - 1700

Work Performed: Morning safety brief. Escort and guidance (assisted by the Schonstedt and handheld GeoXT) for land vegetation removal in L2/transect areas. Completed heavy vegetation removal in L34, that area is now complete.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

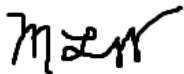
Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Matt Legg
UXO Tech II
10-08-2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 007
Date: 10-08-2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Deputy PM: Zac Tannehill	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington	USACE OESS:
URS Project Geo: Darrell Hall	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech 2	Matthew Legg	10	Escort

Subcontractors

Name	Company	Hours Worked	Role
Robin Rowland	Western Contractors	10	Vegetation Removal

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 010
Date: 10-13-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1730

Work Performed: Initial site familiarization, work plan review, and equipment and supply checks. GEO team completed equipment check.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10-13-15



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, L3, and L34
Project Location: Joliet AAP, Illinois
Report No: 010
Date: 10-13-2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Manager: Zac Tannehill (on site)	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea -10	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington -10	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall -10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	GEO

Subcontractors

Name	Company	Hours Worked	Role

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 011
Date: 10-14-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1730

Work Performed: Began trenching operations in L34. Completed trenches #12 through #15 and began trench #11. Located metal scrap (non-ordnance related). GEO installed IVS and GEO Team member assisted QC in placing seeds in L2.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: Ceramic and glass fragments from mine bodies, classified as MDAS.

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10-14-2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 011
Date: 10-14-2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Manager: Zac Tannehill -10	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea -10	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington -10	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall -10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	DGM

Subcontractors

Name	Company	Hours Worked	Role
Robin Rowland	Western Contractors	10	Operator

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 012
Date: 10-15-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1800

Work Performed: Continued trenching operations in L34. Completed trenches 2, 3, and 11. Began trenches 4 and 5. Investigated where the rail road rock begins on transects 2-5. GEO has collected approximately 75% of the required data in L2.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10/14/2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 012
Date: 10/15/2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Manager: Zac Tannehill-10	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea-11	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington-11	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall-10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	DGM

Subcontractors

Name	Company	Hours Worked	Role
Robin Rollins	Western	10	Heavy Equipment Operator

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 013
Date: 10-16-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1800

Work Performed: Continued trenching operations in L34, completed trenches 4, 5, and 6. GEO finished collecting data for area L2.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: We are still finding small fragments of the ceramic mine bodies.

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10/14/2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 013
Date: 10/16/2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Mngr: Zac Tannehill (on site)-10	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea-11	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington-11	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall-10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	DGM

Subcontractors

Name	Company	Hours Worked	Role
Robin Rollins	Western	10	Heavy Equipment Operator

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 014
Date: 10-19-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1800

Work Performed: Continued trenching in L34. Completed all remaining trenches in L34 with the exception of trench 1. DGM collected beginning and ending points of the trenches.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10/19/2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 014
Date: 10/19/2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Manager: Zac Tannehill	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea-11	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington-11	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall-10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	DGM

Subcontractors

Name	Company	Hours Worked	Role
Robin Rollins	Western	10	Heavy Equipment Operator

Visitors

Name	Company		

URS Group Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 015
Date: 10-20-2015

DAILY SITE REPORT

Site Operating Hours: 0730-1800

Work Performed: Back filled all trenches in L34, pulling the plastic and disposing.

Munitions and Explosives of Concern (MEC)/Material Potentially Presenting an Explosive Hazard (MPPEH) Encountered: None

Disposition of MEC Items Encountered: None

Munitions Debris (MD) Encountered: None

Material Documented as Safe (MDAS) Shipping Information: None

Changed Conditions/Delays/Conflicts Encountered: None

Other comments or additional information: None

Contractor's Verification: On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Pat Gildea
Senior UXO Supervisor
10/20/2015



URS Group, Inc.
12120 Shamrock Plaza Suite 100
Omaha, NE 68154
Contract#: W912DY-09-D-0061-CY02

Project Name: RI at L2, and L34
Project Location: Joliet AAP, Illinois
Report No: 015
Date: 10/20/2015

Project Personnel

URS Project Manager : John Heinicke	URS Munitions Response (MR) Safety Program Manager: Mac Reed
URS Site Manager: Zac Tannehill	URS MR Quality Program Manager: Andreas Kothleitner
URS SUXOS : Pat Gildea-11	USACE Project Manager: Glen Beckham
URS UXOSO/QCS: Randy Burrington-11	USACE OESS: Paul Greene
URS Project Geo: Darrell Hall-10	
URS Geo QC: Garrick Marcoux	

Field Staff

Technician Level	Name	Hours Worked	Role
UXO Tech III	Jim Ficke	10	Team Leader
UXO Tech II	Shane Edwards	10	Team Member
UXO Tech II	Jack Connor	10	Team Member
UXO Tech II	Matt Legg	10	Team Member
DGM	Eric Celebreeze	10	DGM

Subcontractors

Name	Company	Hours Worked	Role
Robin Rollins	Western	10	Heavy Equipment Operator

Visitors

Name	Company		



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 001

DATE: 13 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up		SPECIFIC INSPECTIONS PERFORMED

NON-COMPLIANT ITEMS IDENTIFIED TODAY

NONE

NON-COMPLIANT ITEMS CORRECTED TODAY

NONE

Additional Remarks:

- Six UXO and two geophysical personnel mobilized to the project site on 12 Oct. 2015.
- UXOQCS / UXOSO and SUXOS conducted site-specific orientation and training.
- No field operations were performed. Field crew began equipment preparation and procured supplies as required.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-13-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 002

DATE: 14 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory	Completed Preparatory Phase Inspection for Intrusive Trenching and MPPEH Inspection definable features of work. See remarks below.	
Initial	Intrusive Trenching: Operations began intrusive trenching operations in MRS L34 (trenches 11 through 15). All operations were performed in accordance with applicable WP requirements. See remarks below. MPPEH Inspection and Processing: UXO Team began MPPEH inspection process concurrently with intrusive trenching operations in L34. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Initial phase inspection for intrusive trenching and MPPEH inspection. See remarks below.
Follow-Up		SPECIFIC INSPECTIONS PERFORMED
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Preparatory Phase Inspection. In accordance with RI WP Table 4-1, UXOQCS conducted preparatory phase inspection for Intrusive Trenching and MPPEH Inspection definable features of work. The following elements of WP paragraph 4.7.1 were reviewed and verified:
 - All appropriate plans, documents, and procedures were reviewed.
 - Site-specific training for personnel was completed and training certifications were verified.
 - Preliminary work and site coordination were completed.
 - Equipment and materials were procured and prepared for work.
 - Required safety equipment was issued and emergency procedures were reviewed, briefed, and verified.
 - Verified all procedural and site controls were in place.
 - No administrative, procedural discrepancies, or equipment shortfalls were noted.
- Initial Phase Inspection for Intrusive Trenching Operations: In accordance with RI WP Table 4-1, UXOQCS conducted initial phase inspection for intrusive trenching operations.
 - All personnel had proper PPE.
 - Observed excavation of trenches 11 through 15. Verified excavation process was IAW WP requirements.
 - No discrepancies were noted. QC acceptance inspection will be completed on 10/15/2015.
- Initial Phase Inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted initial phase

inspection for MPPEH inspection concurrently during intrusive trenching operations. Excavated MD (ceramic pieces of M5 landmine) were inspected and re-categorized as MDAS. No discrepancies were noted. No MEC reported.

- UXOQCS seeded MRS L2 in accordance with RI WP.
- UXOQCS assisted Geo Team with IVS installation (ensured ISO seed locations were clear).

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-14-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 003

DATE: 15 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Intrusive Trenching: Intrusive trenching operations continued in MRS L34 (trenches 2, 3, 4, 5, and 11). All operations were performed in accordance with applicable WP requirements. See remarks below. MPPEH Inspection and Processing: UXO Team continued MPPEH inspection process today concurrently with intrusive trenching operations in L34. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Initial phase inspection for intrusive trenching and MPPEH inspection. See remarks below.

NON-COMPLIANT ITEMS IDENTIFIED TODAY

NONE

NON-COMPLIANT ITEMS CORRECTED TODAY

NONE

Additional Remarks:

- Follow-up phase inspection for Intrusive Trenching Operations: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for intrusive trenching operations.
 - Observed excavation of the southwest ends of trenches 4 and 5 that extend through an existing railroad spur. These approximate 35' sections were excavated and checked by the UXO Team. UXOQCS conducted visual inspection with no discrepancies noted, and these sections were backfilled. These short sections were done to facilitate excavation of trench 2 and trench 3.
 - Trench 2 was moved approximately 5' to the southeast along its entire length to prevent disturbing an existing man-made drainage ditch which lies on the northwest side of the MRS. Trench 2 was excavated and checked by UXO team. UXOQCS conducted final inspection of trench 2 and the excavated spoils. No discrepancies noted. Trench 2 was then backfilled.
 - In accordance with RI WP Table 4-1, UXOQCS completed final acceptance inspection of trenches 3, 12, 13, 14, and 15. No MD or MEC was noted during inspection. No discrepancies noted. Trenches will be backfilled and restored to grade by Operations.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during intrusive trenching operations. Excavated MD (ceramic pieces of M5 landmine) were inspected and re-categorized as MDAS. No discrepancies were noted. No MEC reported.
- Geophysical data collection: UXOQCS observed DGM data collection in L2 and end of day IVS tests. No discrepancies noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-15-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 004

DATE: 16 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Intrusive Trenching: Intrusive trenching operations continued in MRS L34 (trenches 4, 5, and 6). All operations were performed in accordance with applicable WP requirements. See remarks below. MPPEH Inspection and Processing: UXO Team continued MPPEH inspection process concurrently with intrusive trenching operations in L34. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Initial phase inspection for intrusive trenching and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection for Intrusive Trenching Operations: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for intrusive trenching operations.
 - Observed excavation of the remaining sections of 4, 5, and 6.
 - In accordance with RI WP Table 4-1, UXOQCS completed final acceptance inspection of trenches 4, 5, 6, and 11. No MD or MEC was noted during inspection. No discrepancies noted. Trenches will be backfilled and restored to grade by operations.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during intrusive trenching operations. Excavated MD (ceramic pieces of M5 landmine) were inspected and re-categorized as MDAS. No discrepancies were noted. No MEC reported.
- Geophysical data collection: UXOQCS observed beginning of day IVS tests. No discrepancies noted. Geo team completed data collection in L2.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-16-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871


PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 005

DATE: 19 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Intrusive Trenching: Intrusive trenching operations continued in MRS L34 (trenches 7, 8, 9, and 10). All operations were performed in accordance with applicable WP requirements. See remarks below. MPPEH Inspection and Processing: UXO Team continued MPPEH inspection process concurrently with intrusive trenching operations in L34. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Initial phase inspection for intrusive trenching and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE
<u>Additional Remarks:</u> <ul style="list-style-type: none">Follow-up phase inspection for Intrusive Trenching Operations: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for intrusive trenching operations.<ul style="list-style-type: none">Observed excavation of trenches 7, 8, 9, and 10.In accordance with RI WP Table 4-1, UXOQCS completed final acceptance inspection of trenches 7, 8, 9, and 10. No MD or MEC was noted during inspection. No discrepancies noted. Trenches will be backfilled and restored to grade by operations.Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during intrusive trenching operations. Excavated MD (ceramic pieces of M5 landmine) were inspected and re-categorized as MDAS. No discrepancies were noted. No MEC reported.		
On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.		
		Randy Burrington Date: 10-19-2015 UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 006

DATE: 20 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Intrusive Trenching: Intrusive trenching operations were completed in MRS L34 (trench 1). All operations were performed in accordance with applicable WP requirements. See remarks below. MPPEH Inspection and Processing: UXO Team completed MPPEH inspection process concurrently with intrusive trenching operations in L34. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive trenching and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection for Intrusive Trenching Operations: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for intrusive trenching operations.
 - Observed hand excavation of the trench 1. Hand excavated down to rail road spur ballast (rock).
 - In accordance with RI WP Table 4-1, UXOQCS completed final acceptance inspection of trench 1. No MD or MEC was noted during inspection. No discrepancies noted.
 - Site restoration (back-filling trenches and plastic removal) began and is expected to be complete on 10/22/2015.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during intrusive trenching operations. No discrepancies were noted.
- No MEC was reported during the remedial investigation of the fifteen trenches or spoils in JOAAP MRS L34. Additionally, no evidence of stained soils, burn/burial pits, ash, or landfill related debris were noted during any portion of the intrusive investigation of the trenches.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-20-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 007

DATE: 21 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory	Completed preparatory phase inspection for MEC Disposal Operations. See remarks below.	
Initial	MEC disposal operations conducted in L2. See remarks below	SPECIFIC INSPECTIONS PERFORMED
		Initial phase inspection for MEC disposal operations. See remarks below.
Follow-Up	MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with analog transect survey operations in L2. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for MPPEH inspection. See remarks below.

NON-COMPLIANT ITEMS IDENTIFIED TODAY

NONE

NON-COMPLIANT ITEMS CORRECTED TODAY

NONE

Additional Remarks:

- Analog transect survey (mag-dig operations) in L2: Operations began analog survey (mag-dig) of L2 transects in the identified sections which are unsuitable for DGM data collection due to vegetation canopy.
 - UXOQCS observed intrusive mag-dig operations and conducted in-progress checks of procedures. No discrepancies noted. Observed detection, excavation, and identification of MEC in transect L2AT16.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during analog transect survey (mag-dig operations) in L2. Inspected all recovered MD reclassified as MDAS. Verified reported MEC as two M66 base fuzes. No discrepancies were noted.
- Completed preparatory phase inspection for MEC disposal operations. Verified WP, SOP, and all equipment on hand. No equipment shortages or discrepancies noted.
- Completed initial phase inspection for MEC disposal operations in L2. Two (2) M66 bases fuzes, were destroyed by open detonation within L2 MRS.
 - Attended demolition safety briefing, verified exclusion zone and all personnel accounted for. Observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-21-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 008

DATE: 22 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with analog transect survey operations in L2. All operations were performed in accordance with applicable WP requirements. See remarks below. MEC disposal operations conducted in L2. See remarks below	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for MPPEH inspection and MEC disposal operations. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Analog transect survey (mag-dig operations) in were completed in L2:
 - UXOQCS observed intrusive mag-dig operations and conducted in-progress checks of procedures. No discrepancies noted. Observed detection, excavation, and identification of MDAS in transect L2AT4.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during analog transect survey (mag-dig operations) in L2. Inspected all recovered MD reclassified as MDAS. Verified reported MEC as one M66 base fuze. No discrepancies were noted.
- Completed follow-up phase inspection for MEC disposal operations in L2. One (1) M66 base fuze was destroyed by open detonation within L2 MRS.
 - Verified exclusion zone and all personnel accounted for. Observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.
- Site/Grid delineation: In preparation for DGM data collection in L2, grids L2A, L2B, L2C, L2D, L2E, L2F, and L2G were flagged for brush removal. UXOSO and GEOQCS will verify grid locations once corners are remarked by operations.
- Mechanical brush removal and surface clearance: Operations completed mechanical brush removal and surface clearance in grids L2A, L2B, L2C, L2D, L2E, L2F, and L2G.
 - UXOQCS observed all operations. No discrepancies noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-22-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 009

DATE: 23 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS		
Preparatory	Preparatory phase inspection for intrusive investigation of high density anomalies located in L2 transects. See remarks below.		
	Initial	Operations began intrusive investigation of high density anomalies in transects located in L2.	SPECIFIC INSPECTIONS PERFORMED
			Initial phase inspection. See remarks below.
Follow-Up	MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED	
		Follow-up inspection for MPPEH inspection. See remarks below.	
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY	
NONE		NONE	

Additional Remarks:

- Preparatory Phase Inspection. In accordance with RI WP Table 4-1, UXOQCS conducted preparatory phase inspection for intrusive investigation definable features of work. The following elements of WP paragraph 4.7.1 were reviewed and verified:
 - All appropriate plans, documents, and procedures were reviewed.
 - Site-specific training for personnel was completed and training certifications were verified.
 - Preliminary work and site coordination were completed.
 - Equipment and materials were procured and prepared for work.
 - Required safety equipment was issued and emergency procedures were reviewed, briefed, and verified.
 - Verified all procedural and site controls were in place.
 - No administrative, procedural discrepancies, or equipment shortfalls were noted.
- Initial phase inspection completed for intrusive investigation of high density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation operations in L2. No discrepancies noted. Observed detection, excavation, and identification of MDAS.
 - No final QC inspections completed, no transect targets are ready for final QC acceptance inspection.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection concurrently during analog transect survey (mag-dig operations) in L2. Inspection all recovered MD reclassified as MDAS. No discrepancies were noted. No MEC reported.
- Observed Geo Team staking-out and reacquiring transect DGM targets. No discrepancies noted.
- UXOQCS seeded six grids in L2. One grid remains to be seeded.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-23-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

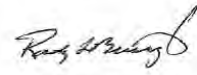
PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 010

DATE: 26 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations began continued investigation of high density anomalies in transects located in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. All operations were performed in accordance with applicable WP requirements. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE
<u>Additional Remarks:</u> <ul style="list-style-type: none">Follow-up phase inspection completed for intrusive investigation of high density anomalies located in L2 transects:<ul style="list-style-type: none">UXOQCS observed intrusive investigation operations in L2. Observed detection, excavation, and characterization of target anomaly locations. No discrepancies noted.Final QC acceptance inspections pending EM-61 mV response verification and characterization by operations.Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies noted. No MEC reported.Observed Geo Team collect DGM data in IVS and L2 grids. No discrepancies noted.		
On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.		
		Randy Burrington Date: 10-26-2015 UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 011

DATE: 27 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low density transect anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. MEC disposal operations conducted within L2. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations, MPPEH inspection, and MEC disposal operations. See remarks below.

NON-COMPLIANT ITEMS IDENTIFIED TODAY

NONE

NON-COMPLIANT ITEMS CORRECTED TODAY

NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation operations in L2. Observed detection, excavation, and characterization of target anomaly locations including MEC items. No discrepancies noted.
 - Final QC acceptance inspections pending EM-61 mV response verification and characterization by operations.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies noted. MEC: Six (6) M66 fuzes were recovered during intrusive operations.
- Completed follow-up phase inspection for MEC disposal operations in L2. Six (6) M66 base fuzes were destroyed by open detonation within L2 MRS.
 - Verified exclusion zone and all personnel accounted for. Attended safety briefing, observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.
- Observed Geo Team collect DGM data in IVS.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-27-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 012

DATE: 28 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low density transect anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. MEC disposal operations conducted within L2. See remarks below.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations, MPPEH inspection, and MEC disposal operations. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation operations in L2. Observed detection, excavation, and characterization of target anomaly locations including MEC items. No discrepancies noted.
 - Final QC acceptance inspections pending EM-61 mV response verification and characterization by Operations.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies noted. MEC: One (1) M66 fuze and one (1) MK III booster were recovered during intrusive operations.
- Completed follow-up phase inspection for MEC disposal operations in L2. One (1) M66 fuze and one (1) MK III booster were destroyed by open detonation within L2 MRS.
 - Verified exclusion zone and all personnel accounted for. Attended safety briefing, observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.
- Observed Geo Team IVS checks and performing anomaly reacquisition in L2.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-28-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 013

DATE: 29 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low density transect anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation operations in L2. Observed detection, excavation, and characterization of target anomaly locations. No discrepancies noted.
 - Operations completed final mV response verification of all twenty-three (23) L2 high-density transect anomalies and began final mV response verification of low-density targets in L2. UXOQCS and USACE OESS observed the verification process.
 - UXOQCS and USACE OESS conducted concurrent QC/QA verification of the final mV response results for the following 23 high-density anomalies: HD-1-185, HD-2-276, HD-3-369, HD-4-394, HD-5-456, HD-6-473, HD-7-556, HD-8-677, HD-9-712, HD-10-832, HD-11-839, HD-12-851, HD-13-862, HD-14-921, HD-15-936, HD-16-943, HD-17-954, HD-18-1018, HD-19-1020, HD-20-1086, HD-21-1111, HD-22-1121, and HD-23-1137. No discrepancies noted. USACE will issue CENAB Form 948 documenting final QA acceptance of the findings for these grids.
 - UXOQCS and USACE OESS conducted concurrent QC/QA acceptance sampling of the following sixteen (16) L2 low-density DGM anomalies: LD-2-1267, LD-3-1268, LD-4-1269, LD-5-1270, LD-6-1271, LD-7-1274, LD-24-1273, LD-25-1275, LD-26-1276, LD-27-1277, LD-28-1278, LD-74-1145, LD-76-1170, LD-89-1239, LD-93-1253, and LD-99-1262. No discrepancies noted.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. No MEC reported.
- Observed Geo Team IVS checks and performing mV verification in L2.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-29-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 014

DATE: 30 Oct. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low-density transect anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE

Additional Remarks:

- Received USACE Form 948 for final QA acceptance of the following twenty-three (23) L2 high-density DGM anomalies: HD-1-185, HD-2-276, HD-3-369, HD-4-394, HD-5-456, HD-6-473, HD-7-556, HD-8-677, HD-9-712, HD-10-832, HD-11-839, HD-12-851, HD-13-862, HD-14-921, HD-15-936, HD-16-943, HD-17-954, HD-18-1018, HD-19-1020, HD-20-1086, HD-21-1111, HD-22-1121, and HD-23-1137.
- In accordance with WP Table 4-1, GIS Manager verified the grid stake accuracy of L2 grids L2A, L2B, L2C, L2D, L2E, L2F, and L2G. No discrepancies were noted.
- Follow-up phase inspection completed for intrusive investigation of low-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation operations in L2. Observed detection, excavation, and characterization of target anomaly locations. Observed Geo Team IVS checks and performing mV verification in L2. No discrepancies noted.
 - UXOQCS conducted concurrent QC acceptance sampling of the following eleven (11) L2 low-density DGM anomalies: LD-12-1167, LD-13-1168, LD-78-1174, LD-79-1175, LD-80-1176, LD-82-1184, LD-84-1201, LD-87-1235, LD-88-1238, LD-90-1243, LD-100-1263, and LD-101-1266. No discrepancies noted.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. No MEC reported.
- Project conference call held from 1000-1030 with PM, Site Mgr., Program QCM, SUXOS, Geo Ops, Geo QCM, and UXOSO/UXOQCS in attendance.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 10-30-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 015

DATE: 2 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low-density anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation and anomaly reacquisition operations in L2. Observed detection, excavation, and characterization of target anomaly locations. Observed EM-61 mV verification in L2. No discrepancies noted.
 - UXOQCS conducted QC acceptance sampling of the following fourteen (14) L2 low-density DGM anomalies: LD-55-504, LD-57-511, LD-59-515, LD-31-10, LD-33-12, LD-50-345, LD-51-402, LD-102-5, LD-105-54, LD-108-57, LD-114-64, LD-115-65, LD-120-72, and LD-124-85. No discrepancies noted.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. No MEC reported.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 11-2-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 016

DATE: 3 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low-density anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. MEC disposal operations conducted in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations, MPPEH inspection, and MEC disposal operations. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation and anomaly reacquisition operations in L2. Observed detection, excavation, and characterization of target anomaly locations. Observed EM-61 mV verification in L2. No discrepancies noted.
 - UXOQCS conducted QC acceptance sampling of the following six (6) L2 low-density DGM anomalies: LD-143-186, LD-144-216, LD-152-294, LD-153-296, LD-154-297, and LD-160-325. No discrepancies noted.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. MEC: one (1) Mk III booster and one (1) ignitor were reported.
- Completed follow-up phase inspection for MEC disposal operations in L2. One (1) ignitor and one (1) MK III booster were destroyed by open detonation within L2 MRS.
 - Verified exclusion zone and all personnel accounted for. Attended safety briefing and observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 11-3-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 017

DATE: 4 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low-density anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of low-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation and anomaly reacquisition operations in L2. Observed detection, excavation, and characterization of target anomaly locations. Observed EM-61 mV verification in L2. No discrepancies noted.
 - UXOQCS conducted QC acceptance sampling of the following sixteen (16) L2 low-density DGM anomalies: LD-106-55, LD-113-63, LD-117-68, LD-118-69, LD-121-75, LD-122-78, LD-148-270, LD-149-271, LD-150-273, LD-159-319, LD-161-337, LD-168-499, LD-169-503, LD-170-505, LD-173-596, and LD-176-602. No discrepancies noted.
 - Verified anomaly #LD-118-69 as a false positive (no find) with Geo T/L.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 11-4-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 018

DATE: 5 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations investigated anomalies in L2 high-density grids L2A, L2B, L2C, L2D, L2E, L2F, and L2G. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection completed for intrusive investigation of high-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation of forty-one (41) anomalies selected for investigation / characterization in L2 grids L2A, L2B, L2C, L2D, L2E, L2F, and L2G. Observed detection, excavation, and characterization of target anomaly locations. No discrepancies noted.
 - In accordance with WP Table 4-1, UXOQCS conducted QC acceptance sampling of the following seventeen (17) L2 high-density grid anomalies:
Grid L2A: GridA_05, GridA_26, GridA_33, GridA_46, GridA_51.
Grid L2B: GridB_07, GridB_08, GridB_13, GridB_18, GridB_27, GridB_32.
Grid L2G: GridG_05, GridG_07, GridG_08, GridC_17, GridG_22, GridG_34.
No discrepancies noted.
 - The following six (6) Q/C seeds were recovered during intrusive investigation / characterization of grids L2B through L2G:

SEED #	Anomaly #	SEED #	Anomaly #	SEED #	Anomaly #
L2B-2	GridB_13	L2C-3	GridC_03	L2D-4	GridD_12
L2E-5	GridE_02	L2F-6	GridF_18	L2G-7	GridG_08
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. No MEC was reported.
- Project conference call from 1000-1030 (local time) with PM, Site Mgr., Program Safety Mgr., Program QC Mgr., SUXOS, GEOQCS, GEO Ops Mgr., and UXOSO/UXOQCS in attendance. Discussed remaining work to be completed.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Randy Burrington Date: 11-5-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 019

DATE: 6 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations continued investigation of low-density anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2. MEC disposal operations conducted within L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations, MPPEH inspection, and MEC disposal operations. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Follow-up phase inspection continued for intrusive investigation of low-density anomalies located in L2 transects:
 - UXOQCS observed intrusive investigation of L2 low-density transect anomalies. Observed detection, excavation, and characterization of target anomaly locations. No discrepancies noted.
 - UXOQCS conducted QC acceptance sampling of the following ten (10) L2 low-density DGM anomalies: LD-128-108, LD-223-1153, LD-227-1180, LD-229-1196, LD-234-1222, LD-235-1230, LD-236-1231, LD-237-1237, LD-238-1248, and LD-239-1251. No discrepancies noted.
 - In accordance with WP Table 4-1, UXOQCS conducted QC acceptance sampling of the following twenty-four (24) L2 high-density grid anomalies:
Grid L2C: GridC_03, GridC_13, GridC_17, GridC_27, GridC_30, GridC_41.
Grid L2D: GridD_03, GridD_08, GridD_12, GridD_19, GridD_24, GridD_37.
Grid L2E: GridE_02, GridE_03, GridE_07, GridE_10, GridE_16, GridE_20.
Grid L2F: GridF_02, GridF_08, GridF_11, GridF_17, GridF_18, GridF_26.
No discrepancies noted.
 - Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted.
 - MEC: Five (5) M66 fuzes were reported.
- Completed follow-up phase inspection for MEC disposal operations in L2. Five (5) M66 fuzes were destroyed by open detonation within L2 MRS.
 - Verified exclusion zone and all personnel accounted for. Attended safety briefing, observed shot preparation by TCRA demolition team. SUXOS and UOXSO/UXOQCS conducted post-shot clearance. No discrepancies noted.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.



Randy Burrington Date: 11-6-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871

PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 020

DATE: 9 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up	Operations completed investigation of low-density anomalies in L2. MPPEH Inspection and Processing: UXO Team conducted MPPEH inspection process concurrently with intrusive investigation in L2.	SPECIFIC INSPECTIONS PERFORMED
		Follow-up inspection for intrusive operations and MPPEH inspection. See remarks below.
NON-COMPLIANT ITEMS IDENTIFIED TODAY		NON-COMPLIANT ITEMS CORRECTED TODAY
NONE		NONE

Additional Remarks:

- Received USACE CENAB Form 948 for final QA acceptance of the following seventeen (17) L2 low-density DGM anomalies: LD-1-1244, LD-2-1267, LD-3-1268, LD-4-1269, LD-5-1270, LD-6-1271, LD-7-1274, LD-24-1273, LD-25-1275, LD-26-1276, LD-27-1277, LD-28-1278, LD-74-1145, LD-76-1170, LD-89-1239, LD-93-1253, and LD-99-1262.
- Follow-up phase inspection continued for intrusive investigation of low-density anomalies located in L2 transects:
 - Operations completed intrusive investigation operations in L2.
 - UXOQCS observed intrusive investigation of L2 low-density transect anomalies. Observed detection, excavation, and characterization of target anomaly locations. No discrepancies noted.
 - UXOQCS conducted QC acceptance sampling of the following ten (10) L2 low-density DGM anomalies: LD-182-636, LD-183-645, LD-185-653, LD-186-656, LD-190-60, LD-192-669, LD-194-703, LD-197-733, LD-199-741, and LD-202-745. No discrepancies noted.
 - QC seed # L2-002 was recovered from anomaly LD-218-1147 on 6 Nov. 2015.
- Follow-up phase inspection for MPPEH Inspection: In accordance with RI WP Table 4-1, UXOQCS conducted follow-up phase inspection for MPPEH inspection process concurrently during intrusive operations in L2. Conducted inspection of all recovered material. No discrepancies were noted. No MEC reported.
- Database Review: UXOQCS conducted a review of the database. A couple of minor edits were noted for correction. Verified MEC log, no discrepancies noted.
- UXOQCS removed three QC seeds from field locations within L2 MRS. The following seeds were removed: L2-001, L2-003, and L2-004. Updated seed log forwarded it to Geo QCS.

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.

Randy Burrington Date: 11-9-2015
UXOQCS



DAILY QUALITY CONTROL REPORT



CONTRACT: W912DY-09-D-0061

DELIVERY ORDER: CY02

PROJECT #: 16170871


PROJECT MANAGER: John Heinicke

PROJECT: RI at L2, L3, and L34

LOCATION: Will County, IL

REPORT #: 021

DATE: 10 Nov. 2015

PHASE	LIST DEFINABLE FEATURES OF WORK, LOCATION, AND INSPECTION COMMENTS	
Preparatory		
Initial		SPECIFIC INSPECTIONS PERFORMED
Follow-Up		SPECIFIC INSPECTIONS PERFORMED
		None
NON-COMPLIANT ITEMS <u>IDENTIFIED</u> TODAY		NON-COMPLIANT ITEMS <u>CORRECTED</u> TODAY
NONE		NONE
<u>Additional Remarks:</u> <ul style="list-style-type: none">No field operations conducted. Personnel cleaned equipment for shipment and prepared for demobilization.		
On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the work plan specifications to the best of my knowledge unless otherwise noted in this report.		
		Randy Burrington Date: 11-10-2015 UXOQCS

Munitions Response Site Prioritization Protocol Tables

Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

Munitions Response Site Name: Former Burning Area (L34) (JAAP-004-R-01)

Component: United States Army

Installation/Property Name: Joliet Army Ammunition Plant

Location (City, County, State): Will County, Illinois

Site Name/Project Name (Project No.): 60419079.16170871

Date Information Entered/Updated: Nov 19, 2015

Point of Contact (Name/Phone): Zac Tannehill / 402-952-2656

Project Phase (check only one):

<input type="checkbox"/> PA	<input type="checkbox"/> SI	<input checked="" type="checkbox"/> RI	<input type="checkbox"/> FS	<input type="checkbox"/> R
<input type="checkbox"/> RA-C	<input type="checkbox"/> IP	<input type="checkbox"/> A O	<input type="checkbox"/> RC	<input type="checkbox"/> LTM

Media Evaluated (check all that apply):

<input type="checkbox"/> Groundwater	<input type="checkbox"/> Sediment (human receptor)
<input checked="" type="checkbox"/> Surface soil	<input type="checkbox"/> Surface Water (ecological receptor)
<input type="checkbox"/> Sediment (ecological receptor)	<input type="checkbox"/> Surface Water (human receptor)

MRS Summary: Describe the munitions-related activities that occurred at the installation, the dates of operation, and the UXO, DMM, or MC known or suspected to be present. When possible, identify munitions, CWM, and MC by type:

The L34 MRS is located along Prairie Creek to the east of Chicago Road and approximately one half mile north of Central Road. The L34 MRS was used from the 1940s to the 1950s for open burning of raw explosives and as a disposal area for demilitarized ceramic mines. During a previous ordnance removal and characterization study, ceramic items believed to be the bodies of nonmetallic mines containing explosive residue were observed. Although unexploded ordnance was not observed during the study, 15 related scrap items were observed that consisted of ceramic and glass M5 mines and nose and base fuzes. The MRS covers approximately 3.5 acres.

Description of Pathways for Human and Ecological Receptors: There are no complete pathways for MC on the MRS. The exposure pathways of handle/tread underfoot for surface MEC and handle for subsurface MEC were determined in the RI to be incomplete.

Description of Receptors (Human and Ecological): Per EM 200-1-12, humans are considered the only receptors to MEC. Receptors include site workers (i.e., MNTP volunteers), employees (i.e., MNTP employees), visitors/trespassers, and construction workers. The type of activities engaged in by site workers and employees are expected to be similar, but exposure and frequency would differ. The site worker, employee, and construction worker exposure pathways may include planting, farming/ranching, weeding, maintaining and constructing trails, burning, and tilling to 12 inches. The visitor/trespasser exposure pathways may include recreation (e.g., field trips, camping, and trail activities).

Table 1

EHE Module: Munitions Type Data Element Table

DIRECTIONS: Below are 11 classifications of munitions and their descriptions. Highlight the scores that correspond with all the munitions types known or suspected to be present at the MRS.

Note: The terms *practice munitions*, *small arms ammunition*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Sensitive	<ul style="list-style-type: none"> UXO that are considered most likely to function upon any interaction with exposed persons (e.g., submunitions, 40mm high-explosive [HE] grenades, white phosphorus [WP] munitions, high-explosive antitank [HEAT] munitions, and practice munitions with sensitive fuzes, but excluding all other practice munitions). Hand grenades containing energetic filler. Bulk primary explosives, or mixtures of these with environmental media, such that the mixture poses an explosive hazard. 	30
High explosive (used or damaged)	<ul style="list-style-type: none"> UXO containing a high-explosive filler (e.g., RDX, Composition B), that are not considered "sensitive." DMM containing a high-explosive filler that have: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	25
Pyrotechnic (used or damaged)	<ul style="list-style-type: none"> UXO containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades). DMM containing a pyrotechnic filler other than white phosphorus (e.g., flares, signals, simulators, smoke grenades) that have: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	20
High explosive (unused)	<ul style="list-style-type: none"> DMM containing a high-explosive filler that: <ul style="list-style-type: none"> Have not been damaged by burning or detonation Are not deteriorated to the point of instability. 	15
Propellant	<ul style="list-style-type: none"> UXO containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor) that are: <ul style="list-style-type: none"> Damaged by burning or detonation Deteriorated to the point of instability. 	15
Bulk secondary high explosives, pyrotechnics, or propellant	<ul style="list-style-type: none"> DMM containing mostly single-, double-, or triple-based propellant, or composite propellants (e.g., a rocket motor). DMM that are bulk secondary high explosives, pyrotechnic compositions, or propellant (not contained in a munition), or mixtures of these with environmental media such that the mixture poses an explosive hazard. 	10
Pyrotechnic (not used or damaged)	<ul style="list-style-type: none"> DMM containing a pyrotechnic filler (i.e., red phosphorus), other than white phosphorus filler, that: <ul style="list-style-type: none"> Have not been damaged by burning or detonation Are not deteriorated to the point of instability. 	10
Practice	<ul style="list-style-type: none"> UXO that are practice munitions that are not associated with a sensitive fuze. DMM that are practice munitions that are not associated with a sensitive fuze and that have not: <ul style="list-style-type: none"> Been damaged by burning or detonation Deteriorated to the point of instability. 	5
Riot control	<ul style="list-style-type: none"> UXO or DMM containing a riot control agent filler (e.g., tear gas). 	3
Small arms	<ul style="list-style-type: none"> Used munitions or DMM that are categorized as small arms ammunition. (Physical evidence or historical evidence that no other types of munitions [e.g., grenades, subcaliber training rockets, demolition charges] were used or are present on the MRS is required for selection of this category.) 	2
Evidence of no munitions	<ul style="list-style-type: none"> Following investigation of the MRS, there is physical evidence that there are no UXO or DMM present, or there is historical evidence indicating that no UXO or DMM are present. 	0
MUNITIONS TYPE	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

Table A

MRS Background Information

DIRECTIONS: Record the background information below for the MRS to be evaluated. Much of this information is available from Service and DoD databases. If the MRS is located on a FUDS property, the suitable FUDS property information should be substituted. In the **MRS Summary**, briefly describe the UXO, DMM, or MC that are known or suspected to be present, the exposure setting (the MRS's physical environment), any other incidental nonmunitions-related contaminants (e.g., benzene, trichloroethylene) found at the MRS, and any potentially exposed human and ecological receptors. If possible, include a map of the MRS.

DIRECTIONS: Document any MRS-specific data used in selecting the **Munitions Type** classifications in the space provided.

The site was used for open burning of propellant and explosive waste, and was used a disposal area for demilitarized ceramic and glass M5 mines. EODT performed a removal action for this area in 2001. The Ordnance Removal and Site Characterization Report indicates that 15 MEC scrap items consisting of ceramic and glass M5 mines and nose and base fuzes were found (one of which contained explosives). However, less than 10% of the site was cleared at that time and the report concluded that UXO were likely still present. A MEC sifting operation was completed as part of a 2007 removal action at L34. A total of 3.5 acres was excavated to 12 inches bgs using heavy equipment and sifted to remove munitions items. Approximately 2,500 pounds of MD and 2,500 pounds of other debris were recovered during the removal; however, the types of MD recovered during the sifting operation were not identified in the L34 Site Specific Final Report (MKM 2010). Based on site history and other removals completed, it is suspected the majority of MD removed from the site was related to the M5 mine. In addition, pieces of M5 mines (MDAS) were found in the upper 24 inches of soil across the majority of the MRS during the RI. No MEC has been recovered at the site to date.

Tables 2 – 9 are intentionally omitted according to Army Guidance.

Table 10

Determining the EHE Module Rating

	Source	Score	Value	
DIRECTIONS: 1. From Tables 1–9, record the data element scores in the Score boxes to the right. 2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. 3. Add the three Value boxes and record this number in the EHE Module Total box below. 4. Circle the appropriate range for the EHE Module Total below. 5. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table. Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.	Explosive Hazard Factor Data Elements			
	Munitions Type	Table 1	0	0
	Source of Hazard	Table 2	0	
	Accessibility Factor Data Elements			
	Location of Munitions	Table 3	0	0
	Ease of Access	Table 4	0	
	Status of Property	Table 5	0	
	Receptor Factor Data Elements			
	Population Density	Table 6	0	0
	Population Near Hazard	Table 7	0	
	Types of Activities/Structures	Table 8	0	
	Ecological and/or Cultural Resources	Table 9	0	
	EHE MODULE DRAFT TOTAL			0
	EHE Module Total		EHE Module Rating	
	92 to 100		A	
	82 to 91		B	
	71 to 81		C	
	60 to 70		D	
48 to 59		E		
38 to 47		F		
less than 38		G		
Alternative Module Ratings		Evaluation Pending		
		No Longer Required		
		No Known or Suspected Explosive Hazard		
EHE MODULE DRAFT RATING				

Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Highlight the scores that correspond with all the CWM configurations known or suspected to be present at the MRS.

Note: The terms *CWM/UXO*, *CWM/DMM*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, that are either UXO, or explosively configured damaged DMM	The CWM known or suspected of being present at the MRS are: <ul style="list-style-type: none"> ♦ CWM that are UXO (i.e., CWM/UXO) ♦ Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged. 	30
CWM mixed with UXO	<ul style="list-style-type: none"> ♦ The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO. 	25
CWM, explosive configuration that are undamaged DMM	<ul style="list-style-type: none"> ♦ The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged. 	20
CWM/DMM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS are: <ul style="list-style-type: none"> ♦ Nonexplosively configured CWM/DMM either damaged or undamaged ♦ Bulk CWM (e.g., ton container). 	15
CAIS K941 and CAIS K942	<ul style="list-style-type: none"> ♦ The CWM/DMM known or suspected of being present at the MRS are CAIS K941-toxic gas set M-1 or CAIS K942-toxic gas set M-2/E11. 	12
CAIS (chemical agent identification sets)	<ul style="list-style-type: none"> ♦ CAIS, other than CAIS K941 and K942, are known or suspected of being present at the MRS. 	10
Evidence of no CWM	<ul style="list-style-type: none"> ♦ Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS. 	0
CWM CONFIGURATION	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

DIRECTIONS: Document any MRS-specific data used in selecting the **CWM Configuration** classifications in the space provided.

The historical use of the site did not include CWM. No CWM has been found during previous investigations and removal actions.

Tables 12 – 19 are intentionally omitted according to Army Guidance.

Table 20

Determining the CHE Module Rating

Source				Score	Value	
<div>DIRECTIONS:</div> <div><div>1. From Tables 11–19, record the data element scores in the Score boxes to the right.</div><div>2. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right.</div><div>3. Add the three Value boxes and record this number in the CHE Module Total box below.</div><div>4. Circle the appropriate range for the CHE Module Total below.</div><div>5. Circle the CHE Module Rating that corresponds to the range selected and record this value in the CHE Module Rating box found at the bottom of the table.</div></div> <div>Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.</div>	CWM Hazard Factor Data Elements					
	CWM Configuration		Table 11		NA	
	Sources of CWM		Table 12			
	Accessibility Factor Data Elements					
	Location of CWM		Table 13		NA	
	Ease of Access		Table 14			
	Status of Property		Table 15			
	Receptor Factor Data Elements					
	Population Density		Table 16		NA	
	Population Near Hazard		Table 17			
	Types of Activities/Structures		Table 18			
	Ecological and/or Cultural Resources		Table 19			
	CHE MODULE DRAFT TOTAL				NA	
	CHE Module Total		CHE Module Rating			
	92 to 100		A			
	82 to 91		B			
	71 to 81		C			
	60 to 70		D			
	48 to 59		E			
	38 to 47		F			
	less than 38		G			
	Alternative Module Ratings		Evaluation Pending			
			No Longer Required			
			No Known or Suspected CWM Hazard			
	CHE MODULE DRAFT RATING					

Table 21

HHE Module: Groundwater Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's groundwater and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional groundwater contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the groundwater, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).	NA
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Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the groundwater migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the groundwater is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in groundwater has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the groundwater to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the groundwater receptors at the MRS.

Classification	Description	Value
Identified	There is a threatened water supply well downgradient of the source and the groundwater is a current source of drinking water or source of water for other beneficial uses such as irrigation/agriculture (equivalent to Class I or IIA aquifer).	H
Potential	There is no threatened water supply well downgradient of the source and the groundwater is currently or potentially usable for drinking water, irrigation, or agriculture (equivalent to Class I, IIA, or IIB aquifer).	M
Limited	There is no potentially threatened water supply well downgradient of the source and the groundwater is not considered a potential source of drinking water and is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only).	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

MRS use indicated no potential MC hazard, no sampling conducted.

Table 22

HHE Module: Surface Water – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).	NA
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Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L

MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA
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Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L

RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA
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MRS use indicated no potential MC hazard, no sampling conducted.

Table 23

HHE Module: Sediment – Human Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with human endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum The Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right maximum value = H).		NA

Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

MRS use indicated no potential MC hazard, no sampling conducted.

Table 24

HHE Module: Surface Water – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface water and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface water contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the surface water, select the box at the bottom of the table.

Contaminant	Maximum Concentration (µg/L)	Comparison Value (µg/L)	Ratios
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		NA

Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface water migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface water is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface water has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface water to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface water receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface water to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface water to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface water to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

MRS use indicated no potential MC hazard, no sampling conducted.

Table 25

HHE Module: Sediment – Ecological Endpoint Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's sediment and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional sediment contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard with ecological endpoints present in the sediment, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		NA

Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the sediment migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the sediment is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in sediment has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the sediment to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the sediment receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to sediment to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to sediment to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to sediment to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

MRS use indicated no potential MC hazard, no sampling conducted.

Table 26

HHE Module: Surface Soil Data Element Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Record the **maximum concentrations** of all contaminants in the MRS's surface soil and their **comparison values** (from Appendix B of the Primer) in the table below. Additional contaminants can be recorded on Table 27. Calculate and record the **ratios** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** by adding the contaminant **ratios** together, including any additional surface soil contaminants recorded on Table 27. Based on the **CHF**, use the **CHF Scale** to determine and record the **CHF Value**. If there is no known or suspected MC hazard present in the surface soil, select the box at the bottom of the table.

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratio
CHF Scale	CHF Value	Sum the Ratios	
CHF > 100	H (High)	$CHF = \sum \frac{[\text{Maximum Concentration of Contaminant}]}{[\text{Comparison Value for Contaminant}]}$	
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		
CONTAMINANT HAZARD FACTOR	DIRECTIONS: Record <u>the CHF Value</u> from above in the box to the right (maximum value = H).		NA

Migratory Pathway Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface soil migratory pathway at the MRS.

Classification	Description	Value
Evident	Analytical data or observable evidence indicates that contamination in the surface soil is present at, moving toward, or has moved to a point of exposure.	H
Potential	Contamination in surface soil has moved only slightly beyond the source (i.e., tens of feet), could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined.	M
Confined	Information indicates a low potential for contaminant migration from the source via the surface soil to a potential point of exposure (possibly due to the presence of geological structures or physical controls).	L
MIGRATORY PATHWAY FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

Receptor Factor

DIRECTIONS: Highlight the value that corresponds most closely to the surface soil receptors at the MRS.

Classification	Description	Value
Identified	Identified receptors have access to surface soil to which contamination has moved or can move.	H
Potential	Potential for receptors to have access to surface soil to which contamination has moved or can move.	M
Limited	Little or no potential for receptors to have access to surface soil to which contamination has moved or can move.	L
RECEPTOR FACTOR	DIRECTIONS: Record <u>the single highest value</u> from above in the box to the right (maximum value = H).	NA

MRS use indicated no potential MC hazard, no sampling conducted.

Table 27

HHE Module: Supplemental Contaminant Hazard Factor Table

Contaminant Hazard Factor (CHF)

DIRECTIONS: Only use this table if there are more than five contaminants in any given medium present at the MRS. This is a supplemental table designed to hold information about contaminants that do not fit in the previous tables. Indicate the **media** in which these contaminants are present. Then record all **contaminants**, their **maximum concentrations** and their **comparison values** (from Appendix B of the Primer) in the table below. Calculate and record the **ratio** for each contaminant by dividing the **maximum concentration** by the **comparison value**. Determine the **CHF** for each medium on the appropriate media-specific tables.

Note: Do not add ratios from different media.

[illegible]

Table 28

Determining the HHE Module Rating

DIRECTIONS:

1. Record the letter values (H, M, L) for the **Contaminant Hazard, Migration Pathway, and Receptor Factors** for the media (from Tables 21–26) in the corresponding boxes below.
2. Record the media's three-letter combinations in the **Three-Letter Combination** boxes below (three-letter combinations are arranged from Hs to Ms to Ls).
3. Using the **HHE Ratings** provided below, determine each media's rating (A–G) and record the letter in the corresponding **Media Rating** box below.

Media (Source)	Contaminant Hazard Factor Value	Migratory Pathway Factor Value	Receptor Factor Value		Three-Letter Combination (Hs-Ms-Ls)		Media Rating (A-G)
Groundwater (Table 21)	NA	NA	NA		NA		NA
Surface Water/Human Endpoint (Table 22)	NA	NA	NA		NA		NA
Sediment/Human Endpoint (Table 23)	NA	NA	NA		NA		NA
Surface Water/Ecological Endpoint (Table 24)	NA	NA	NA		NA		NA
Sediment/Ecological Endpoint (Table 25)	NA	NA	NA		NA		NA
Surface Soil (Table 26)	NA	NA	NA		NA		NA

DIRECTIONS (cont.):

4. Select the single highest Media Rating (A is highest; G is lowest) and enter the letter in the **HHE Module Rating** box.

Note:

An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more media, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.

HHE MODULE DRAFT RATING

HHE Ratings (for reference only)

Combination	Rating
HHH	A
HHM	B
HHL	C
HMM	
HML	D
MMM	
HLL	E
MML	
MLL	F
LLL	G
Alternative Module Ratings	
Note: No analytes exceeded the screening values during the SI or RI fieldwork. Therefore, the MRS is recommended for No Further Action for MC.	Evaluation Pending
	No Longer Required
	No Known or Suspected MC Hazard

Table 29

MRS Draft Priority

DIRECTIONS: In the chart below, highlight the letter **rating** for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Highlight the corresponding numerical **priority** for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS Priority is the single highest priority; record this relative priority in the **MRS Priority or Alternative MRS Rating** at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Draft Rating	Draft Priority	CHE Draft Rating	Draft Priority	HHE Draft Rating	Draft Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	
MRS DRAFT PRIORITY or ALTERNATIVE MRS DRAFT RATING				No Known or Suspected MC Hazard	

Responses to Comments



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

June 2, 2016

REPLY TO THE ATTENTION OF: SR-6J

Mr. Arthur Holz
Commander's Representative
Joliet Army Ammunition Plant
29401 South Route 53
Wilmington, IL 60481-9979

Subject: **USEPA Review/Approval of U.S. Army Responses to Comments on
the Draft Final Remedial Investigation Report for L34, MMRP Site
JAAP-04-R-01, Joliet Army Ammunition Plant, Illinois**

Dear Mr. Holz:

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Army's (Army) responses to EPA comments (RTCs) on the Draft Final Remedial Investigation Report for L34, MMRP Site JAAP-04-R-01. EPA received the responses by e-mail on May 20, 2016.

Based upon our review, the RTCs adequately address EPA's comments. With the incorporation of the information provided in the RTCs, EPA considers the Remedial Investigation Report acceptable.

If you have any questions, or require additional information, please feel free to contact me by phone at (312) 353-5577 or by e-mail (barounis.thomas@epa.gov).

Sincerely,

A handwritten signature in blue ink that reads "Tom Barounis". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Tom Barounis
Remedial Project Manager

cc: Michael Haggitt, IEPA
Travis McCoun, USACE
Zachary Tannehill, AECOM

**USEPA Comments on the Draft Final Remedial Investigation Report for L34
Munitions Response Site (JAAP-04-R-01), Joliet Army Ammunition Plant, Illinois,
February 2016**

March 30, 2016

GENERAL COMMENT

EPA's review indicates that the L34 MRS has been sufficiently characterized based on the results of the RI and previous investigations and removal actions, which have indicated that no munitions or explosives of concern (MEC) (non-metallic mines or other) have been identified in surface or subsurface soil at the L34 MRS. As such, assignment of a MEC Hazard Assessment (HA) Level Category rating is not applicable to the L34 MRS, and the DF RI Report correctly assigns a Munitions Response Site Prioritization Protocol (MRSPP) rating of "No Known or Suspected Hazard" to the L34 MRS.

In addition, sampling for potential sources of munitions constituents (MC) contamination was not required in that no MEC items with exposed explosive filler or burned material were identified during current RI fieldwork.

Based on the reported results of this RI and previous investigations and removal actions, MEC and MC do not appear to pose an unacceptable potential hazard/risk to current and future receptors at the L34 MRS. Therefore, the no further action recommendation presented in the RI appears to be appropriate for the L34 MRS.

SPECIFIC COMMENTS

1. **Section 3.2, Remedial Investigation Activities, Page 3-1:** The purpose of the visual inspection identified in the fourth bullet item is not clarified. For clarity and consistency with the third bullet description, it is recommended that the fourth bullet item be revised to read, "Visual inspection of trenches and trench material to identify evidence of MC [munitions constituents] release mechanisms (e.g., MEC [munitions and explosives of concern] with exposed filler or burned material)."

Response: The fourth bullet will be revised as follows: "Visual inspection of trenches and trench material *to identify MC release mechanisms (e.g., MEC with exposed filler or burned material).*"

2. **Figure 3-2, Preliminary MC Conceptual Site Model (Graphical), Page 1-9:** This "preliminary" conceptual site model (CSM) indicates a partially complete pathway for receptor ingestion or dermal contact of MC leached or infiltrated into subsurface soil of the L34 MSR. However, it shows that this pathway is incomplete for shallow groundwater. While the lack of a groundwater pathway was previously addressed under the Installation Restoration Program (IRP) and no further assessment was

recommended in the 2004 Record of Decision (ROD), add a footnote discussion addressing if and why there is a realistic potential for ingestion or dermal contact of MC in subsurface soil.

Response: A bullet will be added to Figure 3-2 as follows: *“Since the IRP RI determined that site soils were not contaminated, the only potential for MC contamination is if broken/open MEC with exposed filler is found in the subsurface. Therefore, the potential for ingestion or dermal contact of MC in subsurface soil is low.”*

3. **Section 3.2.3, Investigative Trenching, Page 3-1:** This section states that the RI investigative trenches within the L34 MRS were three feet wide, approximately 30 feet apart, and a minimum of 24 inches below ground surface (bgs). However, the discussion does not explain why this trench spacing was chosen and what coverage was achieved. Revise the DF RI Report to include further discussion of the rationale for the spacing and width chosen for the RI trenches, the resulting coverage and confidence achieved. In this discussion provide a reference to the Appendix C, Technical Project Planning Meeting Minutes, notes on Page 2 of 4 for the April 2015 Technical Project Planning (TPP) Meeting and the associated slide 21 [“RI Data Quality Objectives” and the use of UXO Estimator to “provide a 95% confidence level and a MEC density for minor public use (i.e., ≤ 1.0 MEC item/acre)”].

Response: For clarification, DQOs presented during the April 2015 TPP meeting and subsequent meeting notes were “draft” DQOs. Final DQOs developed for L34 are presented in the July 2015 TPP meeting slides and subsequent meeting notes (also presented in Appendix C). Also note that the use of UXO Estimator to provide a level of confidence regarding MEC density was not proposed in the DQOs for L34.

Section 3.2.3, paragraph 1, will be revised as follows: *“Investigative trenching was completed within L34 from October 14, 2015 through October 20, 2015. Trenches were 3 feet wide, approximately 30 feet apart, and with a minimum depth of 24 inches bgs. The systematic trenching approach (i.e., coverage, length, location, depth, spacing, etc.) was agreed upon by the PDT and regulators to provide sufficient confidence that subsurface burn areas/pits were not present. The agreed upon spacing also provided the spacing necessary to spread spoils between the trenches for inspection. Since the entire MRS was previously excavated to 1 foot and sifted to remove ceramic mines, and no MEC was documented during this removal, the PDT and regulators also agreed that trenching to 2 feet bgs would be sufficient to confirm the effectiveness of the previous removal action and provide confidence that no MEC/pits were present. Therefore, a statistical model (e.g., UXO Estimator) was not used. Trench spacing and depth of investigation was completed in accordance with the Final RI Work Plan (URS 2015).”*

4. **Section 5.1.3, Uncertainties with Revised MEC CSM, Page 5-2:** This section states that the “top 12 inches bgs at the entire L34 MRS” were previously excavated and sifted to remove material documented as safe (MDAS), and no MEC items were found during that operation. These results do significantly reduce uncertainty as to whether MEC is present at the L34 MRS. However, Table 4-1, Trench Results, reports that MDAS was found in the top 12 inches as well as the bottom 12 inches bgs of soil removed from most all RI trenches. Moreover, Appendix D, Photographic Log, images show that many MDAS items recovered in the RI were significantly larger than 1 inch. This suggests that the prior excavation and sifting operations to one inch (per Appendix C, slide 28, July 2015 TPP Meeting) did not effectively remove all MDAS from the top 12 inches bgs at L34 MRS and would also contribute to the uncertainty related to the possibility of MEC being in the subsurface of MRS L34. Add a discussion to address this added uncertainty.

Response: The second paragraph of Section 5.1.3 will be revised as follows: “...no MEC items were found during that operation. *The removal action completed at the L34 MRS processed material through a sift plant that included a 1-inch screen. The 1-inch screen should have removed all items greater than 1-inch within the top 12 inches of soil; however, pieces of ceramic/glass mines greater than 1-inch were recovered from the top 12 inches of soil during the investigative trenching operation. The size of ceramic/glass MDAS remaining in the top 12 inches of soil contributes to the uncertainty remaining at the MRS. Although some uncertainty remains, these results significantly reduce...*”

5. **Section 5.2, Revised MC Conceptual Site Model, Page 5-3:** This section concludes that based on results from the RI and information from previous investigations, no source of MC (e.g., MEC with exposed filler or “burned material”) has been encountered at the L34 MRS. As such, the RI finds that no complete pathways exist between MC sources and receptors, and the MC CSM presented on Figure 5-2, Revised MEC Conceptual Site Model (Graphical), for the L34 MRS was revised accordingly. Nevertheless, slide 28 of the July 2015 TPP Meeting presented in Appendix C indicates that a prior MEC removal action completed over the entire L34 MRS to one foot bgs found “burn debris” that was removed and disposed of. Revise this section to address the apparent conflict with the statements on slide 28 in Appendix C.

Response: Section 5.2 will be revised as follows: “...from previous investigations. Only incomplete pathways exist because no source of MC (e.g., MEC with exposed filler or burned material) ~~has been~~ was encountered at the L34 MRS during the RI. In addition, MEC with exposed explosive filler was not encountered during any previous investigation or removal action. However, a former source of contamination (i.e., burned material) was excavated and transported off-site for disposal during the previous removal action. The revised MC CSM...”